

Point-Counterpoint

Point-Counterpoint: Combined MIGS and Cataract Surgery: Maximizing Synergistic IOP Reduction in Mild to Moderate Glaucoma

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INTRODUCTION

Since receiving FDA approval, minimally invasive glaucoma surgery (MIGS) has evolved glaucoma management for clinicians and patients by offering alternative, safer surgical options that reduce recovery time and preserve tissue compared to traditional glaucoma filtering procedures. As the use of MIGS increases, an important question is when and how to use it: should MIGS primarily be paired with cataract surgery, or should standalone MIGS be offered even without the presence of a cataract? Combining MIGS with cataract surgery treats both conditions simultaneously, often achieving greater eye pressure reduction, reduced medication requirements, and a lower risk of additional surgeries. In contrast, some clinicians are advocates for standalone MIGS, arguing that it should be used earlier in disease management, especially in patients without visually significant cataracts, thereby facilitating intraocular pressure management before cataracts have formed. With advancements in technique and MIGS devices, both combined and standalone MIGS are valuable in the appropriate clinical applications. This paper analyzes the advantages and limitations of both approaches, emphasizing how patient-specific considerations affect surgical strategy.

POINT

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COMBINED MIGS AND CATARACT SURGERY:
MAXIMIZING SYNERGISTIC IOP REDUCTION IN MILD TO
MODERATE GLAUCOMA

In patients with mild to moderate open-angle glaucoma and visually significant cataracts, combined minimally invasive glaucoma surgery (MIGS) and cataract surgery is the standard of care rather than standalone MIGS. This approach provides superior outcomes compared to standalone MIGS procedures through synergistic intraocular pressure (IOP) reduction, lower reoperation rates, reduced medica-

tion burden, and optimal cost-effectiveness—all while subjecting patients to a single surgical intervention and recovery period.

The field of glaucoma management was revolutionized for patients with mild to moderate glaucoma in 2012 when the FDA approved the iStent as the first MIGS.¹ The advent of MIGS provided a new strategy to control IOP and reduce medication with an improved safety profile, particularly when combined with cataract extraction. In the United States, a number of MIGS procedures are available, including trabecular meshwork stents (iStent, iStent inject, iStent infinite, and Hydrus), tissue removal procedures (gonioscopy-assisted transluminal trabeculotomy (GATT), Kahook Dual Blade goniotomy, Trabectome, TRAB 360 system, and excimer laser trabeculostomy), Schlemm's canal procedures (VISCO360 device and ab interno canaloplasty [ABiC] using the iTrack microcatheter system), OMNI (uses viscodilation 360 degrees for canaloplasty and trabeculotomy), subconjunctival filtration (AlloFlo and XEN), and ciliary process ablation to decrease aqueous production (endocyclophotocoagulation (ECP) and transscleral cyclophotocoagulation, or TSCPC).¹ MIGS occupies a therapeutic niche between first-line treatments, such as topical medications and laser trabeculoplasty (DSLT/SLT/ALT), and established filtering surgeries used in more advanced glaucoma. Compared to filtering surgeries, MIGS offers a lower complication rate and shorter recovery time.²

It is well accepted that cataract extraction alone can affect IOP.^{3,4} The numbers will vary depending on the study, but overall, the range is a 1–4 mmHg decrease in IOP with cataract extraction alone.^{4,5} The pathophysiology of this phenomenon is likely multifactorial, but the current hypothesis is that as the lens thickens over time during cataract progression, it can obstruct or reduce aqueous humor outflow. With the removal of the cataract, this can open the angle to aid in the outflow of aqueous humor and therefore decrease IOP. Additionally, lens removal deepens the anterior chamber and improves visualization of angle structures, providing optimal surgical access for an-

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gle-based MIGS procedures such as trabecular meshwork stents, goniotomy, and canaloplasty.

Studies have demonstrated that iStent, combined with phacoemulsification, achieves statistically significant reductions in the number of medications needed for IOP control (reduction of 1.4 medications in the iStent combined with phacoemulsification group, 72%, vs reduction of 1.0 medication in the phacoemulsification only group, 50%) at 12 months compared with cataract surgery alone.⁶ Similarly, the HORIZON trial showed that Hydrus combined with cataract surgery produced greater washed-out IOP reduction (33.3% vs 24.8%) at one year compared to cataract surgery alone. This reduction was clinically significant, lowering the modified diurnal intraocular pressure by 2.3 mmHg, leading to no medication needed after Hydrus placement at the 24-month mark in 78% of patients.⁷ The aforementioned data demonstrate that the combined approach is synergistic. The IOP-lowering effect exceeds that achievable with either cataract surgery or MIGS performed as standalone procedures. The combined procedures allow for mechanical obstruction from the cataract and possible resistance at the trabecular meshwork, Schlemm's canal, or both. Surgeons eliminate the cataract's effect on aqueous outflow while directly enhancing conventional drainage pathways.

The primary goals of MIGS include minimizing the need for more invasive procedures, lowering intraocular pressure to slow glaucoma progression, and minimizing dependence on IOP-lowering medications.⁸ A study evaluating the effectiveness of microinvasive glaucoma surgery by Yang et al showed that MIGS combined with cataract surgery yields lower reoperation rates within 1 month to 3 years compared with standalone MIGS procedures, particularly with ECP and goniotomy/canaloplasty.² Analysis of the IRIS Registry data from over 79,000 eyes revealed that at 2 years postoperatively, combined procedures had substantially lower reoperation rates: 3% for ECP with phacoemulsification vs 15% for standalone ECP and 6% for goniotomy/canaloplasty with phacoemulsification vs 24% for standalone procedures.¹ When patients present with visually significant cataracts and mild to moderate glaucoma, combining these procedures allows a single surgical intervention with one recovery period, a reduction in surgical risk, and represents an efficient use of the surgical opportunity. Given this, any patient with glaucoma undergoing cataract surgery should have a MIGS procedure in order to lower IOP.

The practical matters regarding standalone MIGS cannot be dismissed as "systemic limitations." The FDA has approved these procedures for specific indications due to thorough clinical trial data. This can be seen in the trials involving Hydrus, iStent, and iStent inject, which received approval in conjunction with cataract surgery because the clinical trials demonstrating safety and efficacy were conducted. While off-label use of other MIGS devices is not unheard of, it creates concerns and reimbursement challenges that eventually impact the patient. Performing many standalone MIGS procedures off-label raises legal concerns if complications arise; additionally, insurance is unlikely to reimburse for an off-label use. This is not simply a bureau-

cratic obstacle; it reflects the evidence, as proven in clinical trials, that the FDA has reviewed. If there is an increase in off-label use in the absence of substantial comparative effectiveness data in clinical trials comparing standalone vs combined approaches, it may ultimately harm patients by creating cost-related barriers to care. Combination is the standard.

Furthermore, the complication profiles of surgical procedures differ between standalone and combined procedures. In the standalone angle-based MIGS procedures, there are risks of postoperative bleeding that demand an exact surgical technique. However, performing MIGS during cataract surgery allows the surgeon to achieve good visualization while continuing to have increased anterior chamber depth, which can be achieved due to the viscoelastic used during phacoemulsification. In phakic eyes, especially those with shallow anterior chamber depths and/or narrow angles, that may be due to the lens itself. Standalone MIGS may present greater challenges and a higher risk of complications that have not been studied in clinical trials. The safety and efficacy of combined cataract surgery with MIGS, as demonstrated in clinical trials, cannot be applied to standalone interventions without comparative trials.

MIGS combined with cataract surgery offers an opportunity to reduce medication use, an aspect that can be beneficial for patients. While the goal is not to promise patients complete independence from medication, reducing the burden of drops benefits patients struggling with adherence issues, fiscal hardships, ocular surface disease side effects, preservative toxicity, dexterity or mental impairments, or medication hypersensitivities. The benefits can be seen in a study that showed, at 24 months, patients who underwent OMNI, Hydrus, or iStent combined with cataract surgery were significantly more likely to be medication-free than those who underwent cataract surgery alone.⁹ This reduction in reliance on drops is especially useful, given that non-adherence with IOP-lowering medications ranges from 30% to 80% in reported studies.¹⁰ By reducing medication dependence, MIGS plus cataract surgery minimizes the impact of adherence issues on long-term glaucoma control.

A distinction must be made between what is technically possible with off-label use of MIGS procedures and what provides the best patient care. While standalone MIGS may achieve IOP reduction in carefully selected patients, this does not acknowledge the superior outcomes seen with MIGS combined with cataract removal. The assertion that we should intervene with standalone MIGS procedures to avoid "waiting" for the cataract or glaucoma to worsen disregards the pathogenesis of both conditions. The demographic most impacted by glaucoma and cataracts is patients over the age of 60. Performing standalone MIGS in a phakic patient will likely necessitate more surgeries in the future, subjecting the patient to cumulative surgical risks, an increased number of recovery periods, and overall raised health care spending.

Moreover, reoperation rates strongly favor combined cataract removal and MIGS procedures. Research has shown that MIGS performed with cataract extraction has lower rates of secondary glaucoma surgery when compared to

standalone MIGS, suggesting more durable IOP control with the combined procedure.² Additionally, the previously mentioned health care spending shows the cost-effectiveness of combined surgery when contrasted with standalone MIGS.¹¹ Combining MIGS and cataract surgery in a single operation reduces facility fees, the number of times the patients have anesthesia, and time away from work or daily activities due to recovery. From a burden-to-health care-economics perspective, combined MIGS-cataract surgery represents a more cost-effective use of resources than standalone MIGS procedures, particularly given the high likelihood that cataracts will eventually develop for the majority of the glaucoma patient population.

Overall, the pivotal clinical trials and data have shown that combining MIGS with cataract extraction allows patients to undergo a single operation rather than staged procedures, reducing surgical risk, recovery time, and health care costs. For patients with mild to moderate open-angle glaucoma and visually significant cataracts, performing MIGS at the time of cataract extraction represents the most efficient patient care paradigm. It improves visual acuity and visualization of the posterior pole, demonstrates the greatest efficacy for IOP control, reduces medication burden, may delay or prevent the need for more invasive glaucoma filtering procedures, and should be considered the standard of care.

COUNTERPOINT

Brooke Major, OD, MS

THE STANDARD IS TOO RESTRICTIVE WHEN WE ARE TRYING TO PRESERVE FUNCTION

Cataract surgery is not delayed until the cataract becomes hyperdense, more difficult to remove, or compromises a patient's ability to drive. Why, then, do surgeons wait to intervene with MIGS until specific cataract and glaucoma classifications are met? We typically hear of MIGS procedures being done in conjunction with cataract surgery as it provides 1 surgery with 2 procedures, ostensibly doubling the benefit. In many cases, MIGS procedures provide a great deal of benefit to the patient prior to them needing cataract surgery or after having had cataract surgery.¹² A standalone MIGS procedure, such as goniotomy, canaloplasty, viscodilation, or stent implantation, should be considered in patients with mild to moderate primary open-angle glaucoma who have a clear lens or are already pseudophakic, and in whom topical therapy and selective laser trabeculoplasty have already been initiated.

Currently, the one modifiable risk factor in the disease of glaucoma with a strong supporting evidence base is to reduce IOP. Ocular perfusion is a potentially modifiable factor in glaucoma, and emerging evidence suggests that lifestyle interventions and select pharmacologic or nutraceutical strategies may support optic nerve blood flow and reduce the risk of disease progression.¹³ Lowering the IOP through medical or surgical therapy has been proven to slow the progression of glaucoma.¹⁴ We know that a large concern

with patients who have been diagnosed with glaucoma on long-term topical medical therapy is adherence. It has been proven that there is a clinically significant correlation between patient non-adherence with drops and progressive glaucomatous visual field loss.¹⁵ Adherence can be negatively impacted by the cost of drops, which can put a large financial burden on the patient. We must also consider the ability of the patient to actually get the drop in their eyes properly, and when they do, their intolerance of drop-related side effects.¹⁶ Side effects can cause patients to stop taking their drops due to the severity of ocular surface disease or the changes in physical appearance that can be induced or exacerbated by topical treatments. For example, prostaglandin analogs, which have one of the highest efficacies in lowering IOP but are also associated with a very high prevalence of meibomian gland dysfunction, is seen in 92% of patients.¹⁷ Prolonged exposure to topical glaucoma medications, especially multidrug regimens containing preservatives such as benzalkonium chloride, is associated with cumulative damage to the trabecular meshwork and impairment of conventional aqueous outflow pathways.¹⁸ In such cases, pharmacologic treatment alone may fail to maintain IOP at levels necessary to prevent clinically significant optic nerve damage over time.¹⁹ Access to MIGS procedures is important earlier in management, prior to extended use of glaucoma medications and progression of age-related crystalline lens changes.

Further, although patients may claim good compliance with drops, we don't know what the true compliance is. With doctor-administered laser treatments or minimally invasive glaucoma surgeries, this uncertainty is eliminated.

In a patient with mild to moderate primary open-angle glaucoma in whom cataract surgery is not yet indicated and initial intervention using drops and/or laser therapy is not maintaining the IOP within the target range, the option of MIGS should be more readily available.¹⁶ The preferred method would be a limited goniotomy, as trabecular meshwork bypass stents are not currently approved outside of cataract surgery. Looking back at the first approved MIGS, iStent was approved in conjunction with cataract surgery and most surgeons became comfortable with this option of MIGS. In fact, the only stent currently FDA-approved MIGS outside of cataract surgery in the United States is the iStent Infinite, and this can only be performed after other medical or surgical therapies have failed. Currently, devices like iStent generation 1, iStent inject generation 2, and Hydrus are only FDA-approved for implantation at the time of cataract surgery, and off-label use may lead to an insurance claim being denied. Many other MIGS may be approved as standalone but depend on the specific insurance the patient has and would require prior authorization prior to proceeding with the procedure. Without insurance coverage, these procedures could leave a large financial burden on the patient.^{20,21} If the glaucoma is staged as moderate to severe, 360-degree goniotomy with viscodilation may be the treatment of choice.¹⁶ Should the disease continue to progress, a trabeculotomy or tube shunt may ultimately be necessary.¹⁶

Many studies have found that MIGS as standalone procedures are just as effective as a combined MIGS with cataract surgery.²²⁻²⁹ MIGS procedures that are approved outside combined cataract surgery include Kahook Dual Blade, Trabectome, GATT OMNI combined canaloplasty and trabeculectomy, iTrack catheter ABiC, STREAMLINE, XEN, ECP, and iStent Infinite, the latter only after prior surgeries or medications have failed. Since standalone MIGS procedures are available, more studies are being performed to study the level of effectiveness as a standalone procedure.

The question may be asked, why aren't MIGS being performed more often if there are studies that have proven efficacy outside of combination with cataract surgery?²²⁻²⁹ Although the volume of these procedures has been increasing over the last few years,³⁰ the reasons why they are not used as widely in practice in the United States is that most take precise skill to perform and are not FDA-approved outside of cataract surgery. Additionally, most doctors are waiting to refer their patients until the patient is also ready for cataract surgery. This brings about another question of who is performing MIGS procedures combined with cataract surgery? Is it primary cataract surgeons, or are they referring to glaucoma specialists? These procedures require skill in the surgical technique and that comes from experience, which requires patient volume.¹⁶ Prior to 2016, glaucoma specialists were primarily the ones who performed standalone MIGS.³¹ A study that looked at standalone OMNI found that just under half the procedures were conducted by glaucoma surgeons (44.4%), and the remainder were performed by cataract/anterior segment specialists (25.7%), comprehensive ophthalmologists (13.5%), or other providers (16.5%).³² I believe that expanding surgical training and authorization for MIGS procedures may play an important role in improving long-term management and co-management of glaucoma.

Any surgery comes with potential risks and complications, and it is believed that using a combined cataract extraction and MIGS procedure rather than 2 separate surgeries will decrease those risks and complications. MIGS procedures have demonstrated strong safety and efficacy profiles and rapid recovery times, making them an attractive treatment option. Prior to MIGS procedures, if a patient failed topical and laser therapy, the only other option was filtering surgery, which had increased risks for serious adverse events.³³ With their favorable safety profile, rapid recovery, and proven benefits, standalone MIGS procedures support earlier glaucoma intervention rather than waiting for cataract surgery.

Many of these procedures that will help the patient to become less dependent on drops to maintain their IOPs are not reimbursable as standalone procedures.¹² A reduction in both IOP and the number of drops the patient has to use post procedure has been demonstrated in a number of studies involving different MIGS procedures.²²⁻²⁹ There is true effectiveness shown throughout a multitude of studies, but the problems lie in reimbursement, or lack thereof, surgeons not being properly trained, and the fact that most

surgeons are combining MIGS with cataract surgery because patients present with the 2 conditions concurrently. There have been many studies done to show the case for standalone MIGS procedures, which can include the patients being phakic or pseudophakic.^{15-18,30-32} The effectiveness of MIGS procedures vs standalone cataract surgery in reduction of IOP has been proven by multiple studies as MIGS are targeting specific areas within the drainage system of the eye.³³ A meta-analysis and systematic review shows that MIGS are effective in reducing the IOP in patients that still present with their natural lens.³⁴ These studies highlight the clinical value of standalone MIGS as an effective strategy for lowering IOP and reducing dependence on topical medications.

Collectively, the literature demonstrates that standalone MIGS provides meaningful and sustained intraocular pressure reduction in both phakic and pseudophakic patients, and delaying intervention until cataract surgery represents a missed clinical opportunity to intervene. Continued reliance on cataract co-management reflects systemic barriers, including reimbursement limitations and variability in surgical training, rather than a lack of clinical efficacy, and may ultimately restrict patient access to vision-preserving care. Addressing these barriers could facilitate broader adoption of standalone MIGS and support its recognition as a proactive glaucoma treatment, rather than solely as an adjunct to cataract surgery.

CONCLUSION

MIGS can be performed at the same time as cataract surgery, which often helps lower IOP and allows some patients to use fewer IOP-lowering eye drops after surgery, reducing the medication burden and removing reliance on patient adherence. This is especially practical for people who are already planning to have their cataracts removed. Standalone MIGS, on the other hand, is a good option for people who don't need cataract surgery, letting doctors treat glaucoma earlier and help prevent further damage to the optic nerve. As research continues and surgical tools improve, both combined and standalone MIGS are realistic options that let doctors personalize care, aiming to protect vision and improve quality of life.

CONFLICTS OF INTEREST

Not Applicable

FUNDING SOURCES

Not Applicable

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