



Reflections from a 4-year follow-up study:

Insights from Canadian glaucoma surgeons on the **Kahook Dual Blade goniotomy**

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Introducing the first

KDB Canadian Multicentre Study – 4-year real-world outcomes



This **4-year follow-up study** goes beyond merely assessing reductions in intraocular pressure (IOP) and medication usage or evaluating the safety of the procedure. **It underscores the critical role of KDB goniotomy in promoting disease stability, irrespective of disease severity, while significantly enhancing patients' quality of life over both short and long durations.**

The study cohort comprised **108 eyes** from **89 subjects** who underwent **KDB goniotomy** in conjunction with phacoemulsification. At the 4-year mark, patients demonstrated sustained cup-to-disc ratio, visual field, and retinal nerve fibre layer thickness, accompanied by a notable decrease in medication dependency. Specifically, 47% of patients relied on a single anti-glaucoma medication, while a quarter of patients were completely medication-free.

Moreover, **the average IOP dropped to 14 mmHg**, signifying a remarkable **26% reduction**. Surprisingly, **46% of patients achieved and maintained an IOP below 12 mmHg**, despite **62% of all subjects presenting with moderate to advanced glaucoma**. Only two eyes necessitated filtering surgery.

The safety profile of **KDB goniotomy remained favourable**, with any adverse events being transient and non-sight-threatening.⁴

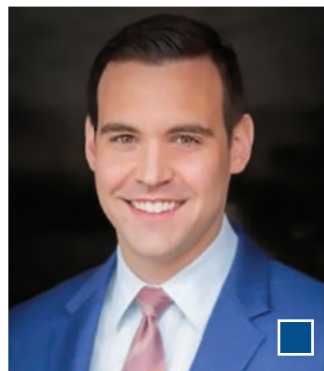
Panel discussion with the study investigators



Dr. Paul Harasymowycz,
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Dr. Oscar Kasner,
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Dr. Steven Schendel,
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Q 1: How does your work distinguish itself from previous research on KDB?

Dr. Ali Salimi: What sets our KDB study apart from previous research is our comprehensive exploration of the impact of KDB goniotomy. For the first time, we looked beyond traditional outcomes like IOP reduction and medication usage to include disease progression markers such as cup-to-disc ratio, visual field, and retinal nerve fibre layer thickness. This multi-dimensional approach provides a thorough understanding of KDB goniotomy efficacy.

Dr. Paul Harasymowycz: Despite our study's retrospective design, we gathered valuable insights. The results demonstrate that KDB goniotomy, a straightforward and quick procedure, yields long-term outcomes comparable to more complex and costly surgeries, emphasizing its potential as a cost-effective treatment option for glaucoma patients.

Q 2: If you could pinpoint the top crucial messages from the study, what would these be?

Dr. Steven Schendel: One key takeaway is the success of KDB goniotomy in managing advanced glaucoma. A significant proportion of patients experienced substantial and prolonged IOP reduction, exceeding expectations for such a cohort.

Dr. Oscar Kasner: Our study provides realistic insights from diverse Canadian patient populations, enhancing the generalizability of our findings. It reflects experiences across various communities and healthcare settings.

Dr. Paul Harasymowycz: Another crucial aspect highlighted in our study is the importance of baseline IOP measurements. By averaging multiple measurements, we mitigate the impact of regression to the mean and obtain a more accurate representation of treatment outcomes. For example, our baseline IOP of 19 mmHg allowed us to demonstrate significant pressure reduction, even in patients with moderately elevated baseline IOP levels. This underscores the efficacy of KDB goniotomy in achieving target pressures comparable to those seen in other studies. Moreover, as Dr. Schendel mentioned, having such a cohort and achieving an IOP of 15 mmHg in 68% of patients and 12 mmHg in 46% of them, I think that is fantastic.

Dr. Oscar Kasner: Additionally, the absence of implanted devices in KDB goniotomy distinguishes it as a minimally invasive option with fewer long-term complications, such as bleb related issues or device malpositioning and failure.

Dr. Paul Harasymowycz: Despite a smaller sample available at the last study visit, our study indicates stable success rates over time, suggesting promising long-term efficacy and sustainability of KDB goniotomy in managing glaucoma. This is encouraging for surgeons and patients alike.

Q 3: How have the study outcomes shaped your perception of KDB's role in treating glaucoma patients, and have you re-evaluated or changed your patient selection criteria for the KDB?

Dr. Steven Schendel: Minimal need for additional surgeries like filtering surgery demonstrates that KDB goniotomy benefits even complex cases without requiring further invasive interventions. For instance, I recently saw a severe glaucoma patient who was reluctant to undergo bleb surgery, and based on our study findings, I could confidently reassure her that KDB goniotomy could be adequate for her needs.

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Dr. Paul Harasymowycz: The success with severe glaucoma patients suggests reconsidering more invasive procedures like trabeculectomy or filtering surgery. Surprisingly, a third of our patients with severe glaucoma, as determined by mean deviation VF, did not fail to respond to treatment, prompting a re-evaluation of our treatment approach for this group of patients.

Dr. Steven Schendel: KDB goniotomy should be considered a viable option for all glaucoma surgeons due to its simplicity and cost-effectiveness. The economic argument is compelling, as KDB goniotomy is more affordable than alternatives like Ahmed Valve or ClearPath. While there will still be cases where these options are preferred, most patients could benefit from the simplicity and affordability of KDB goniotomy.

Dr. Paul Harasymowycz: Another striking finding is that KDB goniotomy is effective for angle-closure glaucoma, underscoring its versatility across different glaucoma subtypes. One in five patients in our study had primary angle closure glaucoma, reinforcing its utility as a first-line option even for complex cases.

Dr. Oscar Kasner: Compared to other interventions like trabeculectomy or tube surgeries, KDB goniotomy appears to have fewer complications, aligning with our goal of minimizing patient risks. This is especially relevant for patients who may benefit from less invasive procedures.

Dr. Paul Harasymowycz: It is important to note that all patients in our study underwent KDB goniotomy with cataract surgery. While this combination yielded positive results, we must consider the implications for patients who do not require cataract surgery. Nevertheless, incorporating KDB goniotomy into discussions with glaucoma patients, especially those presenting for cataract surgery, should be a standard practice.

Dr. Steven Schendel: Without doubt, this study has provided us with increased confidence in the efficacy and versatility of KDB goniotomy. After all, it is about expanding options for our patients while still having more complex procedures available, if needed.

Q 4: What are some of the potential objections to the study or its outcomes, and how would you overcome these concerns?

Dr. Steven Schendel: One potential objection to our study could be the confounding effect of combining cataract surgery with KDB goniotomy. Surgeons may question how much of this reduction is attributable to the cataract versus the KDB goniotomy itself.

Dr. Paul Harasymowycz: Additionally, some may raise concerns about the reported incidence of IOP spikes and hyphema, which were slightly higher than anticipated. Managing IOP spikes and hyphema involves ensuring proper anterior chamber pressurization and minimizing local steroid use. Despite slightly higher-than-expected incidences, these issues were resolved quickly without intervention.

Dr. Steven Schendel: In response to these concerns, I would argue that opting for KDB goniotomy over bleb surgery in uncontrolled glaucoma patients could be advantageous, as hyphema would pose less risk compared to bleb-related complications. This highlights the importance of positioning KDB goniotomy as a preferred option in certain cases.

Dr. Oscar Kasner: Moreover, while post-op adverse events are not unique to KDB goniotomy and are common among all MIGS procedures, it is crucial to note that these events resolve quickly without significant impact on patients' stability or recovery.

Dr. Ali Salimi: Dr. Kasner, you have expressed concerns about the potential for long-term steroid use to contribute to earlier or more prominent post-op failures, such as IOP spikes, compared to patients who have not been on steroids or have had shorter durations of use. Dr. Schendel and Dr. Harasymowycz, what are your perspectives on this matter?

Dr. Paul Harasymowycz: In fact, we conducted a study not long ago comparing the use of NSAIDs versus steroids alone. Surprisingly, we found significantly fewer instances of IOP spikes with NSAIDs. However, we did not examine long-term use and outcomes, which would be valuable to explore further. As for my approach, I typically discontinue steroids after two weeks and utilize Loteprednol and NSAIDs for the entire month.

Dr. Steven Schendel: My approach involves tapering steroids more rapidly after the first month. Generally, these patients don't have much inflammation.

Q 5: Based on your personal experience, what would you say about the learning curve of the KDB goniotomy, and how does this compare with other angle procedures?

Dr. Oscar Kasner: In my experience, I find the KDB goniotomy technique relatively easy to learn and perform, especially with proper training and shared tips for success.

Dr. Steven Schendel: From my standpoint, I believe that the KDB procedure could indeed be learned and mastered by senior ophthalmology residents. In my experience, I have found the iStent Infinity to be easy to use as well, but I have always found the KDB technique to be particularly accessible for beginners. To me, it seems that the Hydrus device requires more skills, the iStent falls in the intermediate range, and the KDB is the simplest to grasp.

Dr. Oscar Kasner: Extending training to comprehensive ophthalmologists can improve access to effective treatments in underserved areas. Considering KDB's affordability per unit, it offers significant advantages for surgical centers with limited budgets.

Dr. Steven Schendel: Additionally, KDB is more affordable per unit, which offers a significant advantage, especially for surgical centers with limited budgets or practices in suburban areas. This combination of affordability and efficacy makes KDB a compelling option for a wide range of surgical settings.



To view the **full study**:

Reflections from a 4-year follow-up study: Insights from Canadian glaucoma surgeons on the Kahook Dual Blade goniotomy

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The Kahook Dual Blade

The **Kahook Dual Blade (KDB)**, introduced to the Canadian market in 2018, is a pivotal tool for **removing Trabecular Meshwork (TM) in glaucoma patients**. The KDB's design streamlines the excision procedure: the pointed tip penetrates the TM, the footplate fits into Schlemm's canal, and the TM stretches as it ascends the ramp, with the dual blades executing a clean excision.



For more information on the
Kahook Dual Blade (KDB)

<https://www.labtician.com/product/kdb-glide/>

The second-generation KDB Glide, introduced in 2022, features bevelled edges and rounded corners for smoother passage along the canal. In-vitro investigations show that the KDB Glide's performance surpasses that of the MVR blade, 360° trabeculectomy with 5-0 prolene suture, and the TrabEx device, providing superior TM removal with minimal residual leaflets and virtually no damage to surrounding tissues.



Take-home points:

What was known from previous 4- to 18-month term studies⁵:

Excisional goniotomy with the KDB effectively lowers IOP and reduces the medication burden in eyes with POAG and other forms of glaucoma across the spectrum of both baseline IOP and disease severity.

The procedure exhibits a safety profile that is on par with other angle-based surgical interventions and enhanced safety compared to filtration procedures.

When paired with cataract surgery, **KDB goniotomy** achieves a significant reduction in both IOP and medication usage while remaining cost-effective and without implants left behind.

KDB goniotomy can be performed by comprehensive ophthalmologists as well as glaucoma specialists.

What is new from the first and only Canadian multicentre study, 4-year term⁴:

KDB goniotomy is a reliable procedure that consistently demonstrates disease stability through medium-term postoperative periods, as reflected in sustained VF-MD, CDR, and RNFL thickness.

This procedure effectively reduces intraocular pressure (IOP) and medication burden in moderate to advanced glaucoma cases, delivering long-lasting outcomes.

Its efficacy extends beyond primary open-angle glaucoma, with significant outcomes in primary angle-closure eyes, making **KDB goniotomy** an appealing option for this type of glaucoma.

KDB goniotomy allows clinicians to choose a straightforward yet effective procedure while keeping more complex and costly surgeries available for potential future needs.

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About the study investigators:

Dr. Paul Harasymowycz is the Founder and Medical Director of the Bellevue Ophthalmology Clinics and the Montreal Glaucoma Institute, and an Associate Professor at the University of Montreal, Dr. Harasymowycz works as a clinician and researcher at The CUO (Centre Universitaire d'Ophtalmologie) and the Guy-Bernier Research Center since 2001. He was Chief of Glaucoma at the University of Montreal for over 15 years and is a Faculty Member of the International Congress of Glaucoma Surgery. He is also the Medical Director of the Quebec Glaucoma Foundation, created in 2007 to promote research on glaucoma and raise awareness of the disease, including early screening of patients at high risk.



Dr. Harasymowycz is a member of the ASCRS glaucoma committee and an International Judge of the XOVA Excellence in Ophthalmology Vision Award. He focuses his research on glaucoma screening, new diagnostic and ocular imaging technologies, and new surgical treatments for glaucoma and cataract surgery. Moreover, he is often sought out to present and teach new surgical techniques and treatments at national and international congresses, and is recognized as an innovator in MIGS techniques.

Dr. Harasymowycz enjoys research and has published over 88 articles in various national and international scientific journals and book chapters over the last twenty years. He is also passionate about teaching students, residents, fellows, and other healthcare professionals.

Dr. Oscar Kasner is an esteemed ophthalmologist who currently serves as the Director of Glaucoma Services in the Department of Ophthalmology at the Jewish General Hospital in Montreal, and as the Director of Glaucoma at McGill University's Department of Ophthalmology. He obtained his M.D. from the Université de Sherbrooke, Faculté de Médecine.



Dr. Kasner completed his residency in internal medicine at Montréal General Hospital, followed by a residency in ophthalmology at the Royal Victoria Hospital in Montréal. He further specialized in glaucoma through a clinical fellowship at the Bascom Palmer Eye Institute, University of Miami, School of Medicine. Dr. Kasner is also the founder and first director of McGill University's glaucoma fellowship program within the Department of Ophthalmology.

In addition to his clinical roles, Dr. Kasner is a dedicated teacher, clinician, and surgeon. He is a prolific researcher and the author of numerous scientific publications. Dr. Kasner actively contributes to many teaching and research committees and is the co-founder and Medical Director of the McGill Glaucoma Information Center.

Dr. Steven Schendel is the Interim Head of the Department of Ophthalmology at Vancouver Coastal Health, and practices at the Vancouver General Hospital Eye Care Centre. He received his MD at the University of Alberta and completed his residency training at the University of British Columbia. Upon finishing his Royal College examinations, he completed a glaucoma fellowship at the Sydney Eye Hospital in Sydney, Australia.



Dr. Schendel served as the Chair of the Planning Committee for the Canadian Glaucoma Society Annual Meeting in Mont Tremblant, Quebec in 2017 and chaired the Planning Committee for the Glaucoma section of the COS Annual Meeting in 2019. His clinical work is focused on glaucoma and cataract, and he is the OR Director at VGH Eye Care Centre.

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About the study investigators:

Dr. Ali Salimi is currently an ophthalmology resident at McGill University. He has published numerous peer-reviewed articles, presented his research internationally, and received various research awards. Dr. Salimi envisions becoming an ophthalmologist-scientist practicing at an academic centre where he can combine his passion for education, research, and innovation in ophthalmology.



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