

KDB Conversations

World-leading glaucoma surgeons share their impressions of the original Kahook Dual Blade and its new incarnation: KDB Glide

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Double Duty of the Dual Blade

The Kahook Dual Blade is now an established tool used by glaucoma surgeons to reliably lower patients' IOP – but how does it perform in combination with cataract surgery?

Esther Hoffmann, Head of Glaucoma Department of Ophthalmology at Mainz, and Anselm Jünemann, Professor of Ophthalmology, Chairman, and Medical Director of the Department of Ophthalmology at the University of Rostock, Germany, discuss using the Kahook Dual Blade for their cataract patients.

What is your experience with using the Kahook Dual Blade (KDB)? What kind of patients do you use the tool for?

Hoffmann: I have been using the KDB for several years and I'm very happy with the tool and its capabilities. I use it for cataract patients with mild to moderate glaucoma when I need a way to lower their IOP – and, in fact, I have been able to get an additional 2–4 mmHg IOP-lowering effect for these patients. For patients before trabeculectomy, I sometimes use the KDB as a bridging therapy.

In my opinion, the KDB is one of the best tools to use for my cataract patients with glaucoma, because I have found that the canal of Schlemm tends to show blood reflux at the end of surgery. The canal of Schlemm tends to show blood reflux at the end of surgery, which signals the successful removal of the impaired outflow pathway.

Jünemann: I also find the KDB useful in combination with cataract surgery. I use it for patients with open angle glaucoma with a target pressure of around 15 mmHg. I have been able to achieve reduction to 13–15 mmHg mean IOP values while reducing



patients' medication. Gonoscopically, the angle should be graded 3–4 in the Shaffer scale.

Due to the excision of trabecular meshwork, using KDB is not just trabeculotomy, but trabeculotomy ab interno, with all the clinical advantages that entails.

What are the main advantages of the KDB in combination with cataract surgery?

Hoffmann: First of all, the surgery is quick and easy to perform – especially if surgeons are used to performing angle surgery – with minimal trauma and, in my experience, no additional paracentesis. KDB is small and allows for "soft" removal of the trabecular meshwork by lifting and stretching the tissue and providing a smooth transition through the canal wall.

Jünemann: The KDB is a brilliant tool for mechanical trabecular excision without alteration of the surrounding tissue, especially the outer wall of the canal of Schlemm. It can be used very easily in combination with cataract surgery using existing paracentesis. I feel very confident when using the KDB thanks to its great safety profile.

Could you share any pearls for surgeons who might be thinking of starting to use the KDB?

Jünemann: To begin with, it might be helpful to select pseudophakic or phakic patients with a deep anterior chamber. Remember that trabecular pigmentation helps to identify the structures of the anterior chamber angle – take time to visualize it during surgery.

If possible, use the KDB first in combination with cataract surgery. First, because corneal alterations like edema may reduce visualization of the anterior chamber angle; second, because the excised trabecular tissue will be removed during cataract surgery.

Hoffmann: You should be educated in performing gonioscopy – perform it in every patient before using KDB to visualize the canal of Schlemm and check if the angle has no goniosynechia. Also, at the beginning of your learning curve, be mindful of not pulling too much tissue.



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Beyond Comparison

Experienced surgeons discuss excisional goniotomy using the Kahook Dual Blade® – and make comparisons with the iStent inject®

Mario Economou, Consultant Ophthalmologist at Queen Sofia Hospital and Praktikertjänst in Stockholm, Sweden, and Achyut Mukherjee, Consultant Ophthalmologist at Oaks Hospital and East Suffolk and North Essex NHS Foundation Trust, Colchester, UK, describe their experience with the Kahook Dual Blade® (KDB) and offer a comparison with the iStent inject®.

Economou started using the KDB and iStent inject in 2016 and has since incorporated them in his clinical practice, using both regularly in combination with cataract surgery or as a standalone procedure. He says: "I use both the KDB and the iStent for ocular hypertension and mild to moderate glaucoma patients. I have also successfully used the KDB in advanced glaucoma when a trabeculectomy is not an option for various reasons. I think that canal-based procedures, such as KDB goniotomy and iStent inject, are safe and effective options for managing glaucoma and should be offered as a first option in appropriate patients. They can produce sufficient IOP reduction for a large portion of glaucoma patients and/or reduce the number of glaucoma medications without compromising safety. I would say that surgical glaucoma treatment needs to become more stepwise, allowing an early intervention with the canal-based procedures that would allow for a



more optimal IOP level for a longer period of time with less dependence on therapeutics."

Mukherjee was one of the first surgeons in the UK to integrate the KDB into their practice back in 2016, and has since used it in a wide range of open angle glaucoma, primary angle closure, and secondary glaucoma patients. He comments: "I have developed a modification to the KDB procedure using indirect gonioscopy to extend the treated area, which my team has called KDB-XL, and which enhances the effect of the KDB procedure." He has also been using the iStent, starting with the iStent inject and more recently moving to the iStent inject W.

Hard data

Economou and Thorsteinn Arnjljots recently published data retrospectively analyzing the results of procedures using KDB or iStent inject as a standalone procedure or in combination with cataract surgery (1).

He comments: "Both the KDB and the iStent, when combined with cataract surgery, showed to be effective in reducing the IOP by more than 20-30 percent while also reducing the number of glaucoma medications. The KDB as a standalone procedure reduced the IOP by 28 percent, which is very useful information when offering a new surgical option for patients who are already pseudophakic and have uncontrolled IOP. The study also showed that the KDB had a good effect on eyes with pseudoexfoliative glaucoma, which is often considered to be more difficult to treat. Both the KDB and the iStent inject proved to be very safe procedures. IOP spikes were very rare, while hyphemas self-resolved within a few days."

Mukherjee's group recently published clinical results of an extended ab interno trabeculotomy using the KDB, and found that 77 percent of all eyes treated with phaco KDB achieved IOP-related success

and reduced medication, compared with 5 percent of eyes treated with just phaco (2).

Patient selection

Mukherjee sees the procedures using the KDB and the iStent inject as appropriate to different patient groups, based on several important differences. In his experience of working with both devices, the KDB lowers the IOP with a greater effect. He uses it up to a 180 degree angle (using indirect gonioscopy with extended KDB-XL), whereas his iStent procedures are usually limited to 40-70 degree angles. In terms of corneal opacity, the KDB requires a good angle view, whereas iStent can be safely performed when the cornea limits the view. The risk of hyphema is, in his experience, greater with the KDB, but hyphemas usually resolve spontaneously. The iStent has a shorter operative time – a few seconds in many cases – whereas with the KDB it is longer, which may be problematic in less cooperative patients.

From one surgeon to another

Economou asserts that his experience with the KDB and the iStent inject is very positive. He elaborates: "Since the introduction of these devices, my clinical and surgical armamentarium has been enriched and I can now offer these two options to my patients with ocular hypertension, mild to moderate glaucoma who also have cataracts and have either a suboptimal IOP or are on glaucoma drops that have negative side effects or compromise compliance."

Mukherjee concludes: "In my experience, the KDB is highly efficacious in a wide range of glaucomas. My clinical experience is that the IOP lowering effect is greater than that of trabecular bypass stents."

References

1. TS Arnjljots, MA Economou, *Clin Ophthalmol*, 15, 541 (2021). PMID: 33603332.
2. M Hamza et al, *Medical and Research Publications* (2021). Available at: <https://bit.ly/3hmmEQV>.

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Blade II: All-Round Adaptability

Kaweh Mansouri, glaucoma specialist at the Clinic Montchoisi in Lausanne, Switzerland, and Ziad Khoueir, Associate Director of the Glaucoma Department at the Beirut Eye & ENT Specialist Hospital (BESH) in Lebanon, share their impressions of the KDB Glide® – a new and improved version of the popular Kahook Dual Blade

How long have you been using the Kahook Dual Blade (KDB), and the new KDB Glide? **Khoueir:** I've organized MIGS surgical wet labs with Kaweh Mansouri during ESCRS meetings since 2016, featuring all the main products in the MIGS arena. At one of those sessions, Syril Dorairaj from Mayo Clinic in Jacksonville, Florida, US – an experienced KDB user – introduced me to the device. My team in Beirut performed our first cases using the KDB in 2017, and we've had a lot of experience with it. Earlier in 2021, we switched to the new KDB Glide. **Mansouri:** I also started using the KDB thanks to Syril Dorairaj, a former co-fellow at UCSD and a good friend, who taught me how to use the device in early 2016 as one of the first specialists in Europe to try it. I started using the KDB Glide in June 2021, and have so far used it in nine cases.

What are the main features and advantages of the KDB Glide?

Khoueir: If I had to choose one word to describe the device, it would be: versatility. This is a highly versatile, safe and effective procedure for treating glaucoma and ocular hypertension. It's



an implant-free excisional procedure that minimizes residual trabecular meshwork (TM) leaflets.

New features in the KDB Glide device reinforce these important strengths: a rounded heel, tapered sides, and smaller footplate deliver optimal interface with Schlemm's canal, permitting precise excision with the instrument's proprietary dual blades, even in variable anatomy.

Mansouri: The KDB Glide shows that New World Medical listens to surgeons. This new, updated version of the original KDB has not just been brought out to keep people interested in the technology – it has been based on genuine, important feedback from us, the users. The main design change eases the movement of the footplate in Schlemm's canal, and allows for anatomical variations among patients. Not every canal of Schlemm is the same – they differ in size, curvature, obstructions, and all these differences have an impact on the procedure. In the KDB Glide, the foot is more rounded than in the original KDB, and it enables the device to even better conform to Schlemm's canal. Moreover, the bottom edge of the device is tapered, which reduces resistance, and creates less friction with the anterior wall of Schlemm's canal.

Which patients do you recommend this tool for?

Mansouri: As with the original KDB, I use it for early to moderate glaucoma patients – those who don't necessarily need an IOP lowering, but would like to reduce the number of medications, and those who need a reduction in both the IOP (to mid-teens) and the number of medications. I like to use it for combined surgery, if needed. In angle closure patients, especially those with peripheral anterior synechia, I can use the KDB Glide and perform Goniosynechialysis (GSL) and open the angle, before continuing to Schlemm's canal. It's a big, unique advantage of the device; no other MIGS device can be used in angle closure.



Khoueir: The KDB Glide is ideal for cooperative patients who will benefit from enhanced outflow of aqueous. Preoperative gonioscopy is crucial in-patient selection. I need a good view on gonioscopy with clear anatomy and ideally a pigmented nasal TM. I'm currently using it either as a combined procedure with phaco or as a standalone treatment at any stage of glaucoma from early to severe, including secondary open angle glaucoma. Combining it with phaco and GSL has also become my procedure of choice in most primary angle closure glaucoma cases. Being able to offer excisional goniotomy in my practice allowed me to be more proactive in early and moderate glaucoma. It is also a suitable and effective option in many cases of advanced disease where I feel my hands are tied, and where I want to reach the target with a minimally invasive approach.

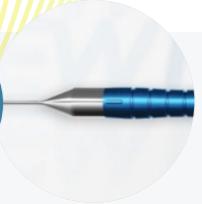
What outcomes have you been able to achieve with the KDB Glide?

Khoueir: My team's two-year data with the first iteration of the KDB shows a significant average IOP reduction of 27 percent, and a 50 percent reduction in the number of glaucoma medications when combined with phaco. Our patients are happy and grateful to have better IOP control and to be less dependent on their medications.

Mansouri: I haven't collected enough data on KDB Glide yet to be able to give a definite answer, but – after only two or three months – I can say that clinical results are as good as with the original device. The reduced friction might result in less scarring and better outcomes – it's too early to say – but the KDB Glide is certainly easier for surgeons to use.



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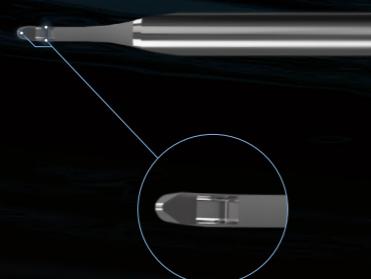


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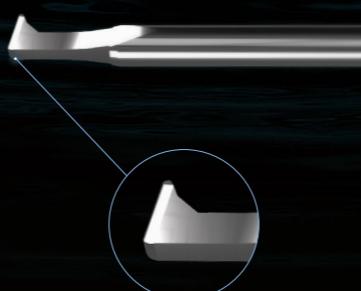


Providing optimal interface with the canal of Schlemm for excisional goniotomy

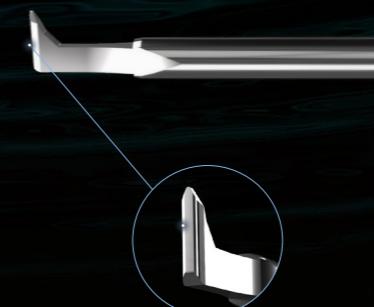
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