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KDB GLIDE®: Goniotomy to Excise Diseased Trabecular Meshwork

Leonard K. Seibold

In eyes with glaucoma, the intraocular pressure (IOP) rises because of disease-related damage to the trabecular meshwork (TM), blocking the flow of aqueous humor into the canal of Schlemm (SC) and distal outflow channels. Removing this diseased tissue—and restoring normal aqueous flow patterns—is an intuitive surgical approach to glaucoma management. As with many human diseases, if the tissue is damaged and dysfunctional, effective treatment requires its removal.

The KDB GLIDE (New World Medical, Rancho Cucamonga, CA) is a single-use instrument designed specifically for the excision of diseased TM in eyes with glaucoma. Excisional goniotomy with the KDB GLIDE is performed via an ab interno approach. The instrument's tip is advanced through the TM until the footplate rests within SC. Between the footplate's tip and heel is a ramp that elevates and stretches the TM and two parallel blades that excise a strip of TM between the blades. The length of the excision is at the surgeon's discretion and typically varies from 3-4 clock hours (90-120 degrees).[1]

This proprietary ramp and dual blade configuration is unique in its ability to lift and stretch the TM prior to excision. The excisional nature of the KDB GLIDE is a critical feature of the procedure and its outcomes. Other procedures that cut through the TM include goniotomy with the microvitreoretinal (MVR) blade or trabeculotomy procedures (such as gonioscopy-assisted transluminal trabeculotomy, the OMNI system [Sight Sciences, Menlo Park, CA], or a 5-0 prolene suture), as well as both trabecular ablation with the Trabectome (MicroSurgical Technology) and goniotomy with the TrabEx device (MicroSurgical Technology). A comparative preclinical study conducted by **Leonard K. Seibold, MD,** University of Colorado School of Medicine, Aurora, Colorado, and colleagues evaluated the TM histologically following excisional goniotomy with the KDB GLIDE versus other techniques and concluded, "The various methods used for performing goniotomy or trabeculotomy resulted in varying degrees of incision or excision of TM. Only the KDB GLIDE device resulted in reliable excision of TM with the other devices producing incision or variable excision of tissue."[2] Remnants of tissue on either side of the incision can reapproximate and close the ostomy resulting in poorer long-term outcomes.[1-3]

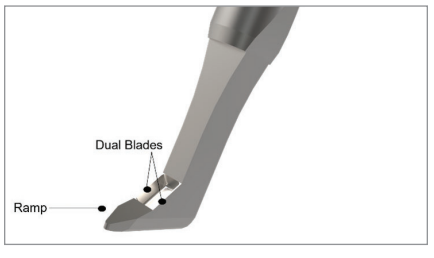

Figure 1. Unique ramp and dual blade configuration of the KDB GLIDE that elevates and stretches trabecular meshwork tissue before excision.

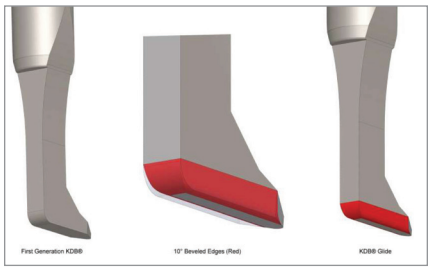

Figure 2. Design enhancements for the second-generation KDB GLIDE include tapered sides on the footplate (highlighted in red) to enhance passage through the canal of Schlemm.

The KDB GLIDE is a second-generation device that retains all the key features of the first-generation Kahook Dual Blade® (KDB) that optimizes TM excision (Figure 1) and incorporates several new design elements to facilitate its smooth advancement through SC. The ramp and dual blade configuration is preserved to elevate and stretch TM in preparation for excision between the parallel dual blades. The width of the KDB GLIDE (230 microns at the blade level tapering to 95 microns at the bottom of the footplate) is smaller than the diameter of SC (approximately 240 microns)[4] to ease its passage along the canal, and new to the KDB GLIDE are tapered sides on the device's footplate and a rounded heel to further enhance its passage along SC during the excision process (Figure 2).

Excisional goniotomy with the KDB can be performed as a standalone procedure or in combination with phacoemulsification or other procedures. "The procedure's effectiveness and safety (summarized in the Table) have been evaluated in more than 50 studies to date in eyes with primary open-angle glaucoma, in addition to secondary open-angle glaucomas, angle-closure glaucoma, congenital and juvenile glaucomas, and steroid-responsive glaucoma," explained Dr. Seibold. "Significant reductions in both IOP and the need for IOP-lowering medications can be achieved not only in mild and moderate disease, but severe stages of glaucoma as well. This efficacy has been confirmed across multiple races and ethnicities. The procedures versatility also allows it to be performed as a standalone or in combination with cataract surgery, resulting in clinically and statistically significant reductions in both IOP and glaucoma medication burden."[5-20]

In summary, the KDB GLIDE was designed with surgical ease in mind and consistently and reliably excises a strip of diseased TM to safely restore normal aqueous outflow in eyes with glaucoma.

Table. Summary of efficacy and safety outcomes of excisional goniotomy with the KDB.

Typical IOP reduction in OAG		Typical medication reduction in OAG		Common adverse events	Study durations
Standalone	Combined	Standalone	Combined		
11-36%[5-10]	12-32%[7-20]	14-92%[5-10]	21-71%[7-20]	IOP spikes 2-13%[7,11-13,19,20] Reoperation 2-7%[6, 15,17,18]	6-24 months

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