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Two Year Outcomes of iStent vs Kahook Dual Blade Goniotomy When Combined with Cataract Surgery in Patients with Mild to Moderate Stage Glaucoma

Purpose/Background:

Many minimally invasive glaucoma surgery (MIGS) procedures are often done at the time of cataract surgery to reduce medication requirements and intraocular pressure (IOP). The purpose of this study is to compare two-year outcomes of Kahook Dual Blade (KDB) goniotomy and iStent trabecular micro-bypass device implantation, which represent two MIGS procedures with few head-to-head comparisons and limited long-term data.

Hypothesis:

Both KDB goniotomy and iStent will reduce IOP as well as dependence on topical medications. One of the devices will outperform the other. With longer follow-up, outcomes may not be as favorable as prior studies have reported. The risk profile will be favorable in each group.

Methods:

We performed an IRB-approved retrospective chart review of all patients with mild-to-moderate glaucoma who had cataract extraction combined with KDB or iStent and a minimum two-year follow up performed by two surgeons. Success was defined as IOP reduction of at least 20% from baseline or reduced use of at least one IOP-lowering medication. All adverse outcomes were recorded. Preliminary statistical analysis of outcomes at one year was completed with t-tests and Pearson's chi square test ($p < 0.05$). Univariate and multivariate models of logistic regression analysis will be completed.

Results:

Of 50 eyes treated with KDB and 138 eyes treated with iStent, success rates at two years were similar between groups at 46% and 52%, respectively ($p = 0.45$). IOP and medication burden decreased from baseline in the iStent group ($p < 0.001$ and $p < 0.001$, respectively), but not the KDB group ($p = 0.22$ and $p = 0.07$, respectively). iStent success rates were higher in mild stage glaucoma than moderate stage (61% vs 43%, $p = 0.03$), but this was not true for KDB ($p = 0.08$). Patients with a history of selective laser trabeculoplasty (SLT) were found to have lower success rates with iStent (28% vs 44%, $p = 0.047$), but this was not noted for KDB ($p = 0.36$). KDB had higher incidence of short-term postoperative hyphema (6% vs 1%, $p = 0.03$), but other complications were similar between groups.

Conclusions/Potential Clinical Implications:

These data suggest iStent may be superior to KDB in terms of efficacy and safety profile at two years. Patients without a history of SLT and with milder stage glaucoma have higher likelihood of success with iStent. Limitations of this study include smaller case numbers of KDB goniotomy, and its retrospective design. Further follow-up and larger studies are needed to confirm these findings.