SURGICAL OPTIONS FOR PATIENTS WITH CATARACTS AND OPEN-ANGLE GLAUCOMA


Recent studies evaluated the efficacy of MIGS combined with phacoemulsification.

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TRABECULAR PROCEDURES COMBINED WITH CATARACT SURGERY FOR OPEN-ANGLE GLAUCOMA: A REPORT BY THE AMERICAN ACADEMY OF OPHTHALMOLOGY

Richter GM, Takusagawa HL, Sit AJ, et al[1]
Industry support for this study: None

ABSTRACT SUMMARY

This report compared the IOP reduction of various trabecular procedures combined with cataract surgery to that of cataract surgery alone in patients with hypertensive open-angle glaucoma (OAG). Patient-specific considerations that might guide procedure selection were also investigated.

The assessment included 10 level 1 randomized controlled trials conducted between 2010 and 2022. In studies with a medication washout, the primary focus was the mean IOP reduction. In studies that did not involve a medication washout, both the mean IOP reduction and the mean medication reduction were reported. The trabecular procedures that were combined with phacoemulsification were the iStent inject (Glaukos), Hydrus Microstent (Alcon), and goniotomy using the Kahook Dual Blade (KDB; New World Medical).

The group that underwent iStent inject placement combined with cataract surgery demonstrated an additional 3.8% IOP reduction compared to the control group over 2 years. Both the Hydrus II study and HORIZON trial demonstrated additional IOP reductions (8.7% and 8.9%, respectively) in the group that underwent combined Hydrus Microstent placement and cataract surgery compared to the control group at 2 years. One randomized controlled trial compared KDB goniotomy combined with cataract surgery to the implantation of a first-generation iStent (Glaukos) combined with cataract surgery at 1 year; there were no trials comparing KDB goniotomy combined with cataract surgery to cataract surgery alone. An additional 3.6% IOP reduction and 8.6% medication reduction were reported in the combined KDB–cataract surgery group compared to the combined iStent–cataract surgery group.

The reported percentages translated to an IOP reduction of approximately 1.6 to 2.3 mm Hg from trabecular procedures combined with cataract surgery compared to cataract surgery alone. This equates to a mean medication reduction of 0.4.

The studies lacked adequate power to report statistically significant rare adverse events. There appeared to be elevated rates of uveitis and iritis in the Hydrus group (5.6% vs 3.7%) and iStent inject group (5.7% vs 4.2%) compared to the control group. Additionally, corneal edema occurred in 1.4% of Hydrus eyes versus none of the control eyes. Finally, hyphema occurred in 1.1% of the Hydrus group versus none in the control group and in 3.7% in the KDB group compared with 1.2% of the iStent group.

DISCUSSION

Among patients with hypertensive OAG, the three most studied combined trabecular procedures appeared to produce similarly modest reductions in IOP and the number of antiglaucoma medications compared to cataract surgery alone at 2 years. Direct comparisons of the trabecular procedures with one another and the inclusion of patients with normal-tension glaucoma (NTG) are required to optimize the incorporation of the combined surgeries into clinical practice. NTG is the most common form of OAG in Asian, Los Angeles Latino, and South African populations. It is essential to

STUDY IN BRIEF

▶ A report drawing on 10 randomized controlled trials found that combining trabecular procedures with cataract surgery provided a greater IOP reduction than cataract surgery alone in patients with hypertensive open-angle glaucoma. The trabecular procedures themselves showed no clear benefits over one another for IOP or medication reduction, but direct comparison studies are required. The risks of uveitis and bleeding were among the factors that might influence surgeons' choice of trabecular procedure.

WHY IT MATTERS

In patients with well-controlled hypertensive open-angle glaucoma, cataract surgery may reduce their medication burden by 0.8 to 1 at 2 years. When cataract surgery is combined with a trabecular procedure, a further 0.4-reduction may occur.[1,2] Because the combined trabecular procedures in this AAO report offered similar benefits, patient factors and surgeon preference may be more important when offering specific options.

understand how these procedures work in NTG and whether they are safe options in these patient populations.

All of the clinical trials discussed in the report were sponsored by industry and therefore subject to potential industry sponsorship bias. Previous reviews have demonstrated that industry sponsorship may lead to more favorable efficacy results compared to nonindustry sponsorship.[3] Future non–industry-sponsored studies are needed to balance the predominance of industry sponsorship in large-scale studies in the field.

COMBINED MICROINVASIVE GLAUCOMA SURGERY WITH PHACOEMULSIFICATION IN OPEN-ANGLE GLAUCOMA: A SYSTEMATIC REVIEW AND META-ANALYSIS

Yuan PHS, Dorling M, Shah M, Panarelli JF, Durr GM[4]

Industry support for this study: None

ABSTRACT SUMMARY

This meta-analysis compared the efficacy and safety of phacoemulsification combined with MIGS to phacoemulsification alone in eyes with OAG. Primary outcomes included IOP and the number of medications after 1 year. Secondary outcomes included the rate of adverse events within 1 year.

Ninety-five studies published before April 2024 were included, with follow-up for 9,733 eyes at 1 year. MIGS was further classified by mechanism of action, including trabecular meshwork bypass, non–gonioscopy-assisted transluminal trabeculotomy (non-GATT) goniotomies with various devices, and GATT via catheter or suture.

IOP reduction was significantly greater with trabecular meshwork bypass (P = .0213), non-GATT (P = < .0001), and GATT (P = < .0001) compared to the phaco-only control group. The non-GATT and GATT groups had significantly higher baseline IOPs but also lower postoperative IOPs than the control group. Additionally, the trabecular meshwork bypass (P = .0028) and GATT (P < .0001) groups demonstrated significantly greater reductions in the number of medications needed after 1 year compared to the control group.

All MIGS groups had nonsignificantly different or lower rates of serious adverse events compared to the control group. There was no significant difference in secondary glaucoma surgery between any MIGS group and the control group. The GATT and non-GATT groups, however, demonstrated significantly higher rates of hyphema than the trabecular meshwork bypass and control groups.

DISCUSSION

The efficacy of topical medical therapy is limited by poor adherence and intolerance, and the efficacy of traditional filtration surgery is limited by sight-threatening surgical risks. The findings of this meta-analysis suggest that combining MIGS with phacoemulsification offers a bridge between pharmaceutical treatment and more invasive glaucoma surgery by reducing IOP, decreasing the medication burden, and preserving safety.

Although the MIGS groups demonstrated a significantly higher IOP reduction than the control group, the non-GATT and GATT groups had significantly higher baseline IOPs, which have a known correlation with greater IOP reduction. This reflects practice patterns in which GATT is selected for eyes with moderate to severe glaucoma.

Key limitations of the meta-analysis are the heterogeneous study designs and the lack of explicit documentation of adverse events in published MIGS articles. Additionally, a significant number of eyes were lost to follow-up, and the possibility of loss due to secondary surgery or other surgical failures increases the risk of selective reporting bias. Finally, only nine of the included studies had a level of evidence of 1B, and many studies were excluded because of low-quality or poor follow-up.

Although the evidence in this meta-analysis is encouraging, better data reporting on MIGS procedures is required to guide clinicians. ■

1. Richter GM, Takusagawa HL, Sit AJ, et al. Trabecular procedures combined with cataract surgery for open-angle glaucoma: a report by the American Academy of Ophthalmology. *Ophthalmology*. 2024;131(3):370-382.
2. Samuelson TW, Chang DF, Marquis R, et al; HORIZON Investigators. A Schlemm canal microstent for intraocular pressure reduction in primary open-angle glaucoma and cataract: The HORIZON Study. *Ophthalmology*. 2019;126(1):29-37.
3. Lundh A, Lexchin J, Mintzes B, Schroll JB, Bero L. Industry sponsorship and research outcome. *Cochrane Database Syst Rev*. 2017;2(2):MR000033.
4. Yuan PHS, Dorling M, Shah M, Panarelli JF, Durr GM. Combined microinvasive glaucoma surgery with phacoemulsification in open-angle glaucoma: a systematic review and meta-analysis. *Am J Ophthalmol*. 2025;270:154-163.

STUDY IN BRIEF

▶ A meta-analysis compared the efficacy and safety of phacoemulsification combined with MIGS to that of phacoemulsification only in eyes with open-angle glaucoma. The study findings suggest that, compared to phacoemulsification alone, MIGS combined with phacoemulsification further reduces IOP and the number of medications required postoperatively without increasing the incidence of serious adverse events.

WHY IT MATTERS

In appropriately selected patients, combining MIGS with phacoemulsification could provide better IOP control and quality of life. Standardized data reporting of these combined procedures is required to maximize the potential for clinical guidelines.

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