

COST-EFFECTIVENESS OF MIGS PROCEDURES AND DEVICES



Recent research sheds light on the economics of combined procedures and technologies.

BY CHRISTOPHER C. TENG, MD, MBA

COST-EFFECTIVENESS ANALYSIS OF HYDRUS MICROSTENT FOR PATIENTS WITH MILD TO MODERATE PRIMARY OPEN-ANGLE GLAUCOMA IN CANADA

Ahmed Iik, Hussein I, Saheb H, et al¹

Industry support for this study: Alcon

ABSTRACT SUMMARY

This cost-effectiveness analysis (CEA) evaluated the economic value of implanting a Hydrus Microstent (Alcon) in combination with cataract surgery versus performing cataract surgery alone in patients with mild to moderate primary open-angle glaucoma. A 15-year semi-Markov model based on 5-year data from the HORIZON trial was used to project the total costs per patient, quality-adjusted life years (QALYs), and incremental cost-utility ratio from the Canadian public health care payer perspective.

The benefits were greater (+0.311 improvement in QALYs), and the costs were lower (-Can\$375) in the combination arm compared with cataract surgery alone. Additionally, fewer patients in the combined group required incisional glaucoma surgery (4.2% vs 24%). The cost-effectiveness acceptability curve showed an 85.3% probability of the combined procedure's being cost-effective compared with cataract surgery alone at a willingness-to-pay threshold of CA\$50,000/QALY.

DISCUSSION

What is the purpose of a CEA?

CEAs assess the costs and health

outcomes of an intervention by comparing it to a different intervention. Investigators estimate the cost to gain, for example, a QALY or a death prevented. CEAs help to identify which interventions maximize health benefits and provide the best value.

What are the key policy or clinical implications of this study for glaucoma care in Canada and beyond?

This CEA found that Hydrus implantation combined with cataract surgery offered both a clinical benefit

and cost savings in a publicly funded health system. Importantly, the model accounted for related issues such as the costs of blindness, falls, and medication—all of which were lower in the combination group. Additionally, the number of invasive glaucoma surgeries required was lower in the combination group. The results of this CEA may influence the adoption of and reimbursement for Hydrus and MIGS devices in Canada and worldwide, especially for glaucoma patients undergoing cataract surgery

STUDY IN BRIEF

► A cost-effectiveness analysis used the safety and efficacy results of a pivotal randomized clinical trial to evaluate the economic value of implanting a Hydrus Microstent (Alcon) in combination with cataract surgery versus cataract surgery alone in patients with mild to moderate primary open-angle glaucoma. Effects and costs over a 15-year horizon were modeled from a Canadian public health care payer perspective. The combined procedure was found to be a cost-effective long-term intervention for this patient population.

WHY IT MATTERS

An earlier Canadian study² used IOP reduction to model visual field loss and found that combining Hydrus implantation with cataract surgery was a cost-effective option. The current study provided a detailed and comprehensive cost-effectiveness analysis of the device using visual field loss data rather than IOP.

At a time of increasing resource constraints, this study showed that early Hydrus implantation combined with cataract surgery could help slow glaucomatous progression and reduce medication use, the rate of falls, and blindness from the disease. The combined procedure rather than cataract surgery alone might also delay or reduce patients' need for more invasive, costly glaucoma surgeries. The findings indicate that early, proactive surgical intervention could be both clinically beneficial and economically responsible, which might help shape future glaucoma care and policy decisions.

EARLY OUTCOMES OF COMBINED PHACOEMULSIFICATION AND AB INTERNO TANITO MICROHOOK TRABECULOTOMY IN OPEN-ANGLE GLAUCOMA

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Industry support for this study: None

ABSTRACT SUMMARY

This prospective, randomized study evaluated the efficacy and safety of ab interno trabeculotomy performed with a Tanito hook (Moria) and combined with cataract surgery versus cataract surgery alone in patients who had open-angle glaucoma. Following phacoemulsification through a temporal clear corneal incision, a nasal ab interno trabeculotomy using a Tanito hook was performed over approximately 180° to 240°.

At 12 months, the mean IOP had decreased from 26.5 to 12.5 mm Hg in the combination group and from 25.3 to 20 mm Hg in the group that underwent cataract surgery alone. In addition, the mean number of antiglaucoma medications had decreased from 0.6 to 0.2 in the combination group and from 1.4 to 1.1 in the group that underwent cataract surgery alone. Complete success at the end of 1 year was achieved in 90.3% of the eyes in the combined group. The most common complication was

hyphema, which occurred in four patients; one eye required an anterior chamber washout.

DISCUSSION

What is a Tanito hook?

This reusable instrument features a sharpened bent tip, which is available in three configurations: straight, right-angled, and left-angled. The Tanito hook may be used to cleave the trabecular meshwork and inner walls of Schlemm canal, and it allows the surgeon to access all quadrants of the trabecular meshwork if desired.

How does the instrument's cost compare to that of other MIGS devices?

The hook's average cost is \$210, which is less than the price of many MIGS devices. Other economical MIGS devices include bent needles, 6-0 polypropylene sutures, and microvitrectinal blades.

How does an ab interno trabeculotomy with a Tanito hook compare with similar MIGS procedures in terms of efficacy and accessibility?

Combining an ab interno trabeculotomy using a Tanito hook with cataract surgery may lower IOP by 4.5 to 14 mm Hg.⁴ This range compares favorably to the reductions achieved with similar MIGS devices and techniques such

as a Kahook Dual Blade (New World Medical) and bent ab interno needle goniectomy, respectively.⁵ Compared to MIGS options such as implants and disposable devices that create trabeculotomies, the Tanito hook is more cost-effective because it is reusable and retails for a lower price. Compared to bent ab interno needle goniectomy, ab interno trabeculotomy using a Tanito hook is more predictable and reproducible and may be able to excise a larger area of trabecular meshwork through a single incision.

As with most MIGS procedures, the most common complication with the Tanito hook is intraoperative hyphema. ■

1. Ahmed IK, Hussein I, Saheb H, et al. Cost-effectiveness analysis of Hydrus Microstent for patients with mild to moderate primary open-angle glaucoma in Canada. *Ophthalmol Glaucoma*. 2025;8(3):302-311.

2. Poitras V, Wells C, Hunink M, et al. Optimal use of minimally invasive glaucoma surgery: a health technology assessment [Internet]. Ottawa (ON): Canadian Agency for Drugs and Technologies in Health; 2019 Jan.

3. Maheshwari D, Grover DS, Ramakrishnan R, Pillai MR, Chautani D, Kader MA. Early outcomes of combined phacoemulsification and ab interno Tanito microhook trabeculotomy in open-angle glaucoma. *Ophthalmol Glaucoma*. 2024;7(2):123-130.

4. Tanito M, Ikeda Y, Fujihara E. Effectiveness and safety of combined cataract surgery and microhook ab interno trabeculotomy in Japanese eyes with glaucoma: report of an initial case series. *Jpn J Ophthalmol*. 2017;61(6):457-464.

5. Omoto T, Fujishiro T, Asano-Shimizu K, et al. Comparison of the short-term effectiveness and safety profile of ab interno combined trabeculotomy using 2 types of trabecular hooks. *Jpn J Ophthalmol*. 2020;64(4):407-413.

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STUDY IN BRIEF

- A prospective, randomized study evaluated the efficacy and safety of ab interno trabeculotomy performed with a Tanito hook (Moria) and combined with cataract surgery versus cataract surgery alone in patients who had open-angle glaucoma. The combined procedure was found to be efficacious and was associated with relatively minimal complications.

WHY IT MATTERS

Because it is reusable and its cost is low, the hook may be particularly appealing in low-resource settings and where MIGS devices are unaffordable or unavailable.