Case Report

Case report: Sustained-release intracameral therapy as an interventional approach in open-angle glaucoma

Abstract

Topical medications to lower intraocular pressure (IOP) are central to managing glaucoma. However, issues with adherence, damage to the ocular surface, and high costs often limit their effectiveness, especially in elderly patients. Sustained-release intracameral drug delivery systems have emerged as a potential alternative. This report discusses the successful application of iDose TR in a 77-year-old woman with mild-to-moderate open-angle glaucoma who faced significant ocular surface disease and treatment challenges due to topical therapy. After sequential bilateral implantation, the patient maintained stable IOP control, reduced her use of topical medications, and saw a significant improvement in her quality of life.

Keywords: iDose, glaucoma, eye drop, corneal transplantation

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Introduction

Glaucoma management has typically depended on topical IOP-lowering medications as the first line of treatment, with laser or surgical options reserved for later stages. While effective, long-term topical therapy is often hindered by poor adherence, difficulties with eye drop use, and high costs.[1–4] Additionally, prolonged use of topical agents and preservatives can harm the ocular surface, leading to discomfort, inflammation, and a drop in quality of life.[5]

Recently, there has been a shift toward interventional glaucoma, which aims to use procedural treatments earlier to achieve lasting IOP control while reducing the need for daily topical medications. This approach draws parallels to strategies in other chronic diseases, moving treatment earlier in the disease process to enhance long-term outcomes and patient satisfaction. Interventional glaucoma includes minimally invasive procedures and sustained-release drug delivery systems aimed at improving adherence, reducing treatment burden, and protecting ocular surface health.[6,7]

One such innovation is the iDose TR (Glaukos Corp),[8] a drug-eluting implant that is anchored into the scleral wall, piercing through the trabecular meshwork. It continuously delivers the prostaglandin analog, travoprost, for at least three years. Clinical trials have shown its safety and effectiveness, including no significant loss of corneal endothelial cells and a high percentage of patients remaining off topical medications for up to 3 years postoperatively.[9]

iDose TR is indicated for the treatment of patients with ocular hypertension and open-angle glaucoma. Contraindications include active ocular infection, corneal endothelial dystrophy (e.g., Fuchs endothelial dystrophy), a history of corneal transplantation, and known or suspected hypersensitivity to travoprost.[8] As the implant is approved for use specifically in open-angle glaucoma, caution is warranted in patients with narrow angles or other angle abnormalities. Reported adverse effects include increased iris pigmentation, a class-related effect that has been well documented with topical prostaglandin analog therapy.

This case report details the sustained-release intracameral travoprost implantation in an elderly patient with mild-to-moderate open-angle glaucoma who suffered from significant ocular surface disease and treatment challenges related to chronic topical therapy, showcasing the potential role of interventional glaucoma in improving both clinical results and patient-reported outcomes (Figure 1A- 1C).

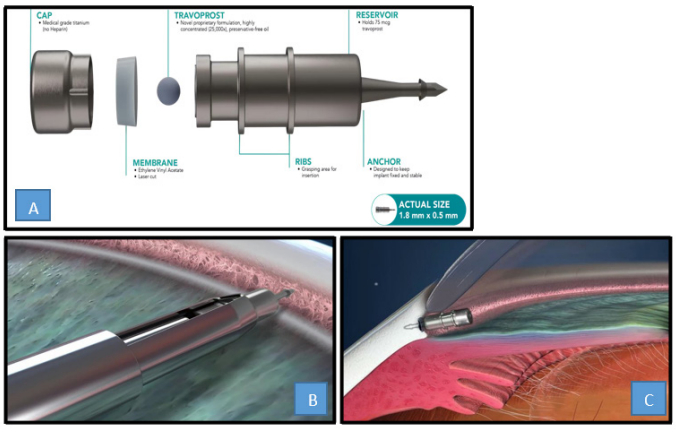

Figure 1A–1C A) The iDose TR (travaprost intracameral implant) 75 mcg is anchored into the scleral wall

B) Piercing through the trabecular meshwork with the insertor grasper

C) Allowing for the slow release of the drug into the anterior chamber.

Case presentation

A 77-year-old white woman with a history of primary open-angle glaucoma was referred for ongoing care after her previous glaucoma specialist retired. The patient was pseudophakic in both eyes, having had uncomplicated cataract surgery six years prior without concurrent minimally invasive glaucoma surgery. Her medical history was otherwise normal.

At the time of presentation, her best-corrected visual acuity was 20/20 in both eyes, and her IOP measured 14 mm Hg in each eye. Despite adequate pressure control, she was using four topical glaucoma medications: preservative-free timolol maleate 0.5% twice daily in both eyes, brinzolamide 1% three times daily, and a netarsudil mesylate/latanoprost combination drop 0.02%-0.005% once nightly.

This regimen indicated a history of poorly managed IOP, despite two rounds of selective laser trabeculoplasty. Her previously documented peak pressures exceeded 30 mm Hg in both eyes.

As seen in Figure 2, her optical coherence tomography (OCT) revealed severe inferotemporal retinal nerve fiber layer (RNFL) thinning in both eyes. The patient also had moderate visual field loss with mean deviations of -1.47 dB in the right eye and -2.38 dB in the left eye (Figure 3). Examination of her ocular surface showed conjunctival injection, hypersensitivity, and prominent corneal verticillata, consistent with chronic toxicity from topical medications. She reported discomfort, sensitivity to light, dissatisfaction with her appearance, and significant financial strain from the cost of medications.

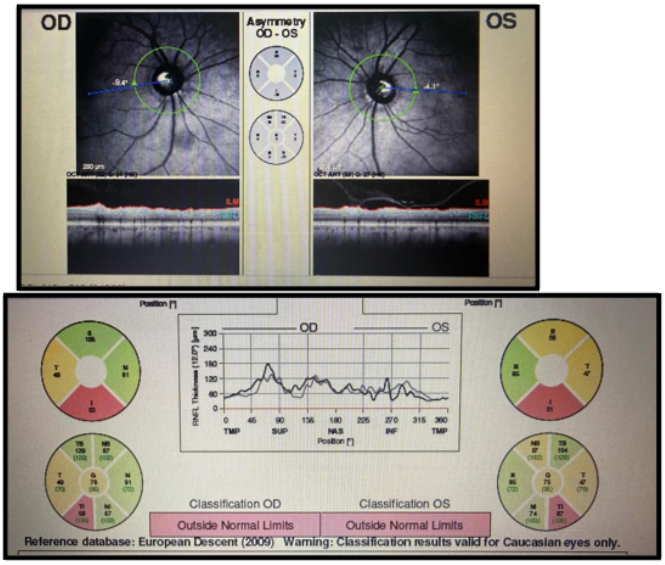

Figure 2 The patient's OCT revealed severe inferotemporal thinning with nerves measuring 78 µm in the right eye and 76 µm in the left eye.

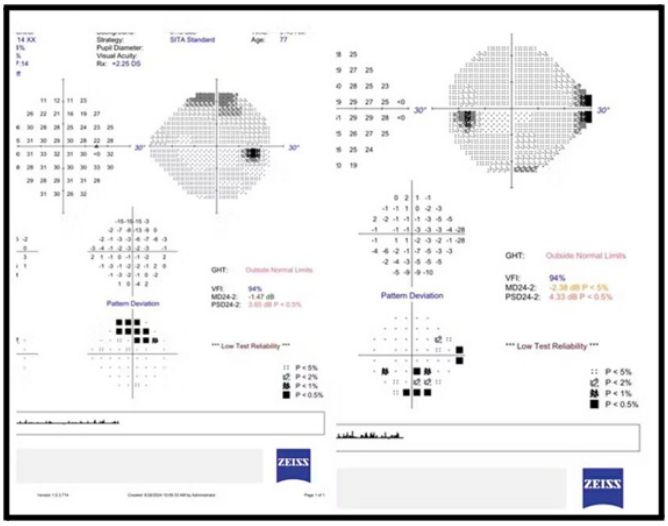

Figure 3 The patient showed moderate bilateral visual field loss with mean deviations of −1.47 dB in the right eye and −2.38 dB in the left eye.

Given her stable but medication-dependent IOP control, manageable visual field loss, and notable intolerance to topical therapy, she was considered a good candidate for sustained-release intracameral treatment with iDose TR.

Surgical technique

The iDose TR implantation occurred sequentially, starting with the right eye and then the left eye 1.5 months later. During each procedure, a paracentesis incision was made. Preservative-free lidocaine was followed by injecting an ophthalmic viscosurgical device (OVD) into the anterior chamber. A separate approximately 1.8-mm clear corneal incision was then created. With the patient's head and microscope positioned for gonioscopic visualization, the implant was securely anchored into the superonasal scleral wall through the trabecular meshwork. Proper positioning was confirmed, and the injector was carefully withdrawn. Any remaining viscoelastic material was removed with balanced salt solution (BSS). There were no complications observed during surgery.

Postoperative course and outcomes

On the day of each procedure, the patient stopped all topical glaucoma medications and used only postoperative prednisolone acetate and a topical antibiotic. On the first postoperative day, IOP was measured at 12 mm Hg in both eyes. Initially, timolol and brinzolamide were resumed, while the netarsudil/latanoprost combination drop was stopped to address ocular surface toxicity.

One week postoperatively, IOP remained stable, allowing the discontinuation of brinzolamide. Three months after bilateral implantation, visual acuity stayed at 20/20 in both eyes, with IOP measuring 15 mm Hg in the right eye and 12 mm Hg in the left eye while only using timolol twice a day. RNFL thickness remained stable compared to measurements taken 1.5 years earlier.

Importantly, the patient experienced complete resolution of conjunctival injection, corneal verticillata, ocular irritation, and sensitivity to light. She noted a drastic improvement in her quality of life, mentioning both physical comfort and increased social confidence after the chronic redness in her eyes resolved.

Discussion

This case demonstrates the potential role of sustained-release intracameral therapy for patients with open-angle glaucoma who experience substantial treatment burden from topical medications despite adequate IOP control. For patients with difficulty administering drops, ocular surface discomfort, or treatment fatigue, early use of procedural pharmaceuticals such as iDose TR may reduce dependence on daily topical therapy while maintaining effective IOP control.

By limiting frequent self-administration and reducing exposure to preservatives, intracameral sustained-release therapy may help preserve ocular surface health and improve treatment adherence. These benefits are particularly relevant for patients whose quality of life is affected by chronic drop use rather than by uncontrolled disease. When applied to appropriately selected patients with mild-to-moderate glaucoma, this approach may enhance overall treatment satisfaction.

Safety data from prospective randomized phase 2b and phase 3 clinical trials indicate that iDose TR is associated with adverse events including increased intraocular pressure, iritis, dry eye, visual field defects, eye pain, ocular hyperemia, and reduced visual acuity. These ocular events occurred in approximately 2–6% of patients and were predominantly mild and transient. Although macular edema has historically been considered a potential risk of prostaglandin therapy, it was not observed as a safety signal in clinical trials of iDose TR.[10–12]

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Procedurally, the implant is anchored into the scleral wall under gonioscopic visualization, and careful technique is required to ensure stable positioning against the trabecular meshwork. Device dislodgement may occur with inadequate fixation but can be managed intraoperatively by repositioning with the delivery handpiece. The titanium implant is classified as MR conditional, allowing MRI to be performed under specified conditions, including magnetic field strengths of up to 3 Tesla, a maximum spatial field gradient of 40 T/m, and operation in normal operating mode.[8]

Clinical trials have demonstrated sustained drug delivery for up to three years. In 2026, the U.S. Food and Drug Administration approved reimplantation following loss of efficacy, allowing device replacement to support long-term IOP management.[13]

Currently, two sustained-release intracameral pharmaceutical therapies are FDA approved for intraocular pressure management: iDose TR and Durysta (bimatoprost 10-mcg intracameral implant).[14,15] No head-to-head clinical trials directly comparing the two are currently available. Key differences include implant design and duration of effect. While iDose TR is a non-biodegradable implant that releases travoprost for up to three years, Durysta is a biodegradable implant that dissolves over approximately 6–12 months. Both therapies have demonstrated efficacy in lowering intraocular pressure in their respective clinical trials and may reduce medication burden for patients.[15–17]

Procedurally, iDose TR implantation is typically performed in an operating room setting, while Durysta may be implanted in-office under slit-lamp visualization.[18,19]

Conclusion

In an elderly patient with open-angle glaucoma, significant intolerance to topical medications, and preserved visual function, bilateral implantation of a sustained-release travoprost intracameral device led to stable IOP control, reduced medication use, and a notable improvement in quality of life. This case supports the consideration of sustained-release procedural therapies as part of a personalized, patient-centered approach to managing glaucoma.

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None.

Conflict of interests

The authors declare that they have no known competing financial interests or personal relationships that appeared to influence the work reported in this study.

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