CUSTOMIZING CARE AND MINIMIZING RISK WITH MIGS

Two scenarios highlight how various minimally invasive procedures can be used to address specific obstacles in glaucoma management.



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MIGS IN A PATIENT WITH ALZHEIMER DISEASE AND UNCERTAIN COMPLIANCE

A 61-year-old White man with pseudoexfoliation glaucoma underwent cataract surgery with placement of a posterior chamber IOL in both eyes in 2020. He did not undergo a glaucoma procedure in either eye. At the time of the surgery, the therapeutic regimen for both eyes consisted of a fixed combination of timolol 0.2% and brimonidine 0.5% (Combigan, AbbVie), latanoprost, and dorzolamide. Two years later, selective laser trabeculoplasty was performed on both eyes, but no medications were discontinued after the procedure. His visual fields were normal.

GLAUCOMA EVALUATION

The patient was referred for glaucoma management in 2024, 1 year after he was diagnosed with Alzheimer disease. His vision was 20/20 OU, and the IOP was 16 mm Hg OD and 17 mm Hg OS. His glaucoma medication regimen had not changed since his cataract surgery. The cup-to-disc ratio was 0.5 OD and 0.7 OS. OCT imaging showed a normal retinal nerve fiber layer (RNFL) thickness in the right eye and borderline RNFL loss in the left eye. Humphrey visual field testing (Carl Zeiss Meditec) was normal in the right eye and showed a probable nasal step in the left eye. A review of the patient's records showed that his IOP had consistently been in a normal range in the right eye but had sometimes reached the low 20s mm Hg in the left eye.

SIGNS OF PROGRESSION

One year later, the patient's IOP status had not changed, but visual field testing showed mean defects of 9.86 OD and 16.51 OS. Both tests seemed highly unreliable, with large numbers of false positives and false negatives. OCT imaging was again normal in the right eye and showed stable disease in the left eye.

"THE PATIENT'S ALZHEIMER DISEASE ... MADE HIS ADHERENCE TO PRESCRIBED MEDICAL THERAPY A MAJOR CONCERN. HIS WIFE ACCOMPANIED HIM TO HIS APPOINTMENTS, BUT SHE ADMITTED THAT SOME DOSES OF HIS DROPS HAD BEEN MISSED."

The patient's Alzheimer disease, however, made his adherence to prescribed medical therapy a major concern. His wife accompanied him to his appointments, but she admitted that some doses of his drops had been missed.

A CALL FOR MIGS

The disease in the patient's left eye seemed to be progressing from preperimetric glaucoma to real visual field loss. Uncertain patient adherence and visual field loss indicated that the right eye required treatment. Canaloplasty and goniotomy using the Omni Surgical System (Sight Sciences) combined with placement of an intracameral travoprost implant (iDose, Glaukos) were recommended for both eyes.

Surgery was performed 6 months ago on the left eye and 5 months ago on the right eye. His postoperative IOPs have been in the low teens bilaterally on a fixed combination of timolol and dorzolamide administered twice daily.

CASE SUMMARY

For this patient with Alzheimer disease, surgical intervention addressed compliance issues and decreased the risk of vision loss.

ANGLE SURGERY AFTER PENETRATING KERATOPLASTY FOR STEROID-INDUCED GLAUCOMA

A 24-year-old man with keratoconus underwent penetrating keratoplasty (PKP) in his left eye in January 2024 and developed steroid-induced glaucoma during the following 18 months. Despite maximally tolerated medical therapy (MTMT), including pilocarpine dosed four times daily, brimonidine three times daily, a fixed combination of dorzolamide 2% and timolol ophthalmic solution 0.5% (Cosopt, Théa Pharma) twice daily, netarsudil 0.02% (Rhopressa, Alcon) daily, latanoprost nightly, and oral acetazolamide 500 mg twice daily, his IOP remained poorly controlled. The patient experienced drug intolerance and difficulty managing the medication load, and the IOP ranged from 26 to 45 mm Hg across visits.

GLAUCOMA EVALUATION

When the patient was referred for glaucoma management, his BCVA was 20/50 OS. A slit-lamp examination showed a posterior subcapsular cataract in the left eye and cup-to-disc asymmetry, with a ratio of 0.2 in the right eye and 0.55 with inferior thinning in the left eye, likely secondary to prolonged corticosteroid use in the left eye. Gonioscopy showed open angles with visibility of the scleral spur and a 1+ pigmented trabecular meshwork in the left eye. OCT showed diffuse RNFL thinning in the left eye. Reliable visual field tests could not be obtained.

Given the patient's young age, conservative measures were attempted initially. Selective laser trabeculoplasty was performed in May 2025, but the treatment was limited by poor visualization through the PKP graft. At the time of the procedure, the IOP was 26 mm Hg on MTMT. One month later, the IOP had improved to 18 mm Hg, and the graft was clearer. MTMT, however, was still required.

A TAILORED SURGICAL APPROACH

Given the need for consistent IOP control, the high medication burden, and the patient's increasing intolerance of therapy, further surgical intervention was discussed. Both he and our team wanted to avoid incisional surgery in the setting of the recent PKP graft. Considering the improved graft clarity and the reported success of gonioscopy-assisted transluminal trabeculotomy in steroid-induced glaucoma,[1,2] phacoemulsification, IOL implantation, and 360° goniotomy and canaloplasty using the iTrack (Nova Eye Medical) were planned.

The patient underwent uncomplicated cataract extraction, IOL implantation, and MIGS in September 2025. Intraoperative visualization was challenging because of honeycomb epitheliopathy, likely related to the long-term use of netarsudil. The illuminated iTrack microcatheter facilitated visualization within Schlemm canal, and the 360° goniotomy and canaloplasty were successfully performed.

Subsequent follow-up visits demonstrated a sustained reduction of IOP and the medication burden in the left eye. On postoperative day 1, the patient's visual acuity was 20/70 OS, the IOP was 14 mm Hg on a fixed combination of dorzolamide and timolol administered twice daily, and a microhyphema was evident. One week later, his visual acuity had declined to hand motion owing to increased hyphema, and the IOP remained well controlled. By postoperative week 3, his visual acuity had improved to 20/40, and the IOP was 15 mm Hg on a fixed combination of dorzolamide and timolol instilled twice daily. In October 2025, the IOP measured 11 mm Hg, and the graft was clear, with no evidence of rejection or edema. The fixed-combination drug was discontinued because of ocular surface irritation and replaced with latanoprost administered nightly. At his most recent visit in April 2026, the patient's UCVA was 20/25 OS, the IOP was well controlled, and the PKP graft was clear and compact.

"GIVEN THE NEED FOR CONSISTENT IOP CONTROL, THE HIGH MEDICATION BURDEN, AND THE PATIENT'S INCREASING INTOLERANCE OF THERAPY, FURTHER SURGICAL INTERVENTION WAS DISCUSSED. BOTH HE AND OUR TEAM WANTED TO AVOID INCISIONAL SURGERY IN THE SETTING OF THE RECENT [PENETRATING KERATOPLASTY] GRAFT."

CASE SUMMARY

This case highlights the benefits of 360° goniotomy and canaloplasty in managing refractory steroid-induced glaucoma after PKP. Traditional incisional surgery after PKP poses a substantial risk to graft survival and is associated with higher complication rates.[3-5] In this patient, angle surgery achieved sustained IOP control on fewer medications, preserved PKP graft integrity, and avoided the risks of incisional glaucoma surgery. ■

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