

Point-Counterpoint

Section Editors:

Christine Siguan Bell, MD, DPBO
Edgar U. Leuenberger, MD, DPBO

Glaucoma Hot Topics Debate

Maria Hannah Pia De Guzman, MD, DPBO^{1,2}, Stelson L. Sia, MD, MHA, FPAO, FPCS^{1,3},
Pamela Allarey, MD, DPBO^{1,4,5}, Denise Polly Chao-Po, MD, DPBO^{1,2},
Jose Angelo Ferrolino, MD, DPBO^{1,6}, Alexander Joseph Reyes, MD, DPBO^{1,5},
Christine Siguan Bell, MD, DPBO^{1,7}, Jesus Altuna, MD, DPBO^{1,8},
Maria Catherina Coronel-Nasol, MD, DPBO^{1,9}, Rigo Daniel C. Reyes, MD, DPBO^{1,10},
Carlo Josemaria Rubio, MD, DPBO^{1,11}, Jose Ma. Martinez, MD, DPBO^{1,12}

¹Philippine Glaucoma Society

²St. Luke's Medical Center, Quezon City

³Ospital ng Maynila, Manila

⁴Lucena United Doctors Hospital, Lucena City

⁵The Medical City, Pasig City

⁶De La Salle University Medical Center, Cavite

⁷University of Cebu Medical Center, Cebu

⁸The Department of Health Eye Center, East Avenue Medical Center, Quezon City

⁹University of Santo Tomas Hospital, Manila

¹⁰Asian Hospital Medical Center, Alabang

¹¹Peregrine Eye and Laser Institute, Makati City

¹²St. Luke's Medical Center-Global City, Taguig City

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Primary Angle Closure Glaucoma: Trabeculectomy versus Phaco-trabeculectomy

Case 1: A 53 year old male has been diagnosed with glaucoma for a year and has been maintained on 3 anti-glaucoma medications. Visual acuity (VA) in each eye is 20/30. Without medications, the baseline intraocular pressures (IOP) were measured at 32 and 31 mmHg on the right and left eye respectively. Even with medications, IOP was lowered only to 20 mmHg OD and 19 mmHg OS. Both optic discs showed glaucomatous changes. Furthermore, visual field exams showed significant progression on OD. The medications were deemed insufficient to control IOP. Two surgical procedures are being considered: trabeculectomy or combined phacoemulsification-trabeculectomy.

be achieved by performing a trabeculectomy. For this patient, immediate removal of the cataract is not yet warranted. The Advanced Glaucoma Intervention Study states that a lower IOP yields slower progression which is the priority in this case.¹

Additionally, post-operative management for combined surgery may present greater difficulties. The final IOP may be unpredictable for phaco-trabeculectomy.² Several studies show better long term IOP control with trabeculectomy alone.^{3,4} Considering the patient's current VA, removing the cataract may not further improve the patient's VA. Some studies comparing trabeculectomy vs phaco-trabeculectomy failed to show evidence of VA improvement following phaco-trabeculectomy procedures.⁴ The additional cost to the patient in performing a combined surgery is also a disadvantage.

Trabeculectomy:

Maria Hannah Pia De Guzman, MD
Stelson L. Sia, MD, MHA, FPAO, FPCS

To prevent further optic nerve damage and progressive deterioration of visual fields, lowering IOP to more acceptable levels is necessary. This can

Phaco-trabeculectomy:

Pamela Allarey, MD
Denise Polly Chao-Po, MD

There are several reported disadvantages of doing trabeculectomy prior to cataract surgery.

First, similar to any intraocular surgery, the risk for cataract progression after a separate trabeculectomy is higher.⁵ This will result to a thicker lens vault which then may aggravate a pre-existing angle closure.⁶ Second, there is an increased risk of bleb failure after phacoemulsification.^{7,8}

Complications related to filtering surgeries are also often more difficult to manage in phakic eyes compared to pseudophakic ones. Secondary angle closure and aqueous misdirection are such complications that may be aggravated with presence of the native lens.⁹ By combining the 2 procedures, patient and doctor inconvenience arising from multiple trips to the operating room may be avoided.

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Primary Angle Closure Suspect: Phacoemulsification with intraocular lens implantation versus Laser iridotomy +/- iridoplasty

Case 2: A 54 year old female is complaining of a 2-month, cloudy vision in the left eye associated with intermittent eye pain and redness. Her right eye has no light perception. Baseline visual acuity in the left eye is 20/50 which improves to 20/20 with pinhole. Other pertinent findings in the left eye include: refraction of

+3.00 diopters, IOP of 12 mmHg, and a cup-to-disc ratio of 0.5 vertically and horizontally. Gonioscopy on the left eye revealed that two quadrants (inferior and temporal) are appositionally closed which open to the scleral spur on indentation. Two options are being entertained for this case: phacoemulsification with intraocular lens implantation or laser iridotomy +/- iridoplasty. What is the better option for this patient?

Laser Iridotomy:

Jose Angelo Ferrolino, MD
Alexander Joseph Reyes, MD

The mechanism of angle closure in this case is principally due to pupillary block, which laser iridotomy relieves by allowing aqueous fluid to bypass the pupil. This effectively opens the appositionally closed angle and increases the angle width.¹⁻⁴ Laser iridotomy has few, if any, complications and the majority of patients do well without requiring further treatment.

Phacoemulsification:

Christine Siguan Bell, MD
Jesus Altuna, MD

Several studies have shown that the lens has a significant effect in angle closure. An increase in the lens vault can directly narrow the anterior chamber angle, worsen pupillary block, and aggravate irido-lenticular contact. Cataract surgery can address these problems by deepening the anterior chamber, relieving the pupillary block, and widening the angle.⁵⁻⁷

Additionally, phacoemulsification can lower IOP compared to laser iridotomy. Thus, fewer anti-glaucoma drugs may be required and likely lead to a better quality of life.⁸⁻¹⁰ Patients who undergo phacoemulsification are also likely to require fewer surgeries in the future.¹⁰

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Normal Tension Glaucoma: Treat versus Observe

Case 3: A 59-year-old male presented with a triangular fleshy mass on the right eye. Both eyes have a best-corrected VA of 20/20. IOP was measured at 17 and 18 mmHg for OD and OS, respectively. The right optic disc showed a CDR of 0.7 with an intact rim and the corresponding OCT showed normal RNFL thickness. The left optic nerve had a larger cupping at 0.8 with a thinned inferior rim. Its OCT revealed significant thinning of the RNFL. Disc hemorrhages were absent in both eyes. Corneal pachymetry were measured at 560 μ m OD and 562 μ m OS. Only nonspecific defects were seen in the visual field OD while the left eye revealed a paracentral scotoma. Can we opt to observe the patient or should treatment be initiated?

Treat:

Maria Catherina Coronel-Nasol, MD
Rigo Daniel C. Reyes, MD

Considerations for managing normal tension glaucoma (NTG) include: ensuring that the IOP is normal over a 24-hour period and ruling out treatable causes of optic neuropathy, nocturnal hypotension, hyperviscosity, as well as other vascular factors.

Several studies have studied the association between IOP and visual field progression. The Collaborative Normal Tension Glaucoma (CNTG)

study stated that visual field progression is slower if IOP is reduced by 30%.¹ Another study concluded that patients with NTG treated with brimonidine 0.2% eye drops are less likely to have visual field progression compared to those treated with timolol 0.5% eye drops.² Maintaining IOP at acceptable levels that halt glaucoma progression is imperative in NTG.

Observe:

Carlo Josemaria Rubio, MD
Jose Ma. Martinez, MD

Observation in NTG prevents patient exposure to the side effects of medical treatment such as ocular surface disease, allergic reactions, periorbital changes, and potential systemic side-effects.

Though it is true that 35% of control eyes in the CNTG study exhibited progressive visual field changes, 65% of the control eyes still did not.¹ In addition, other studies showed that progression among NTG patients is slow at a rate of only 0.9 dB/year.^{1,3} In a 20-year study in Japan, only 1.4% of NTG patients developed unilateral blindness while 9.9% developed bilateral blindness.⁴

Observation allows the ophthalmologist to monitor the natural course of the disease and make an informed decision on when to initiate treatment.

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