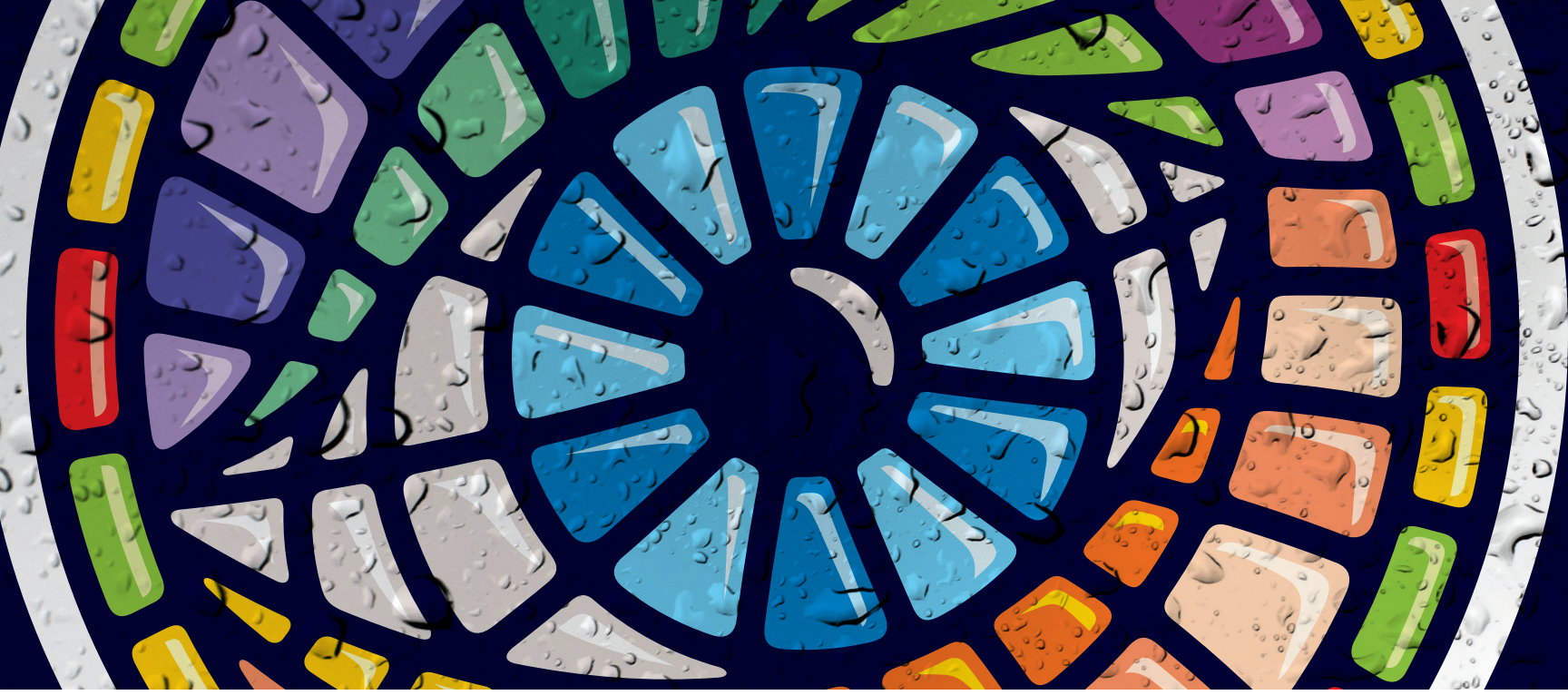

DON'T BECOME NARROW-MINDED WHEN IT COMES TO NARROW ANGLES


Consider the full picture before putting together your management plan.

BY AUBRY TACKETT, OD, AND NATE R. LIGHTHIZER, OD, FAAO

As optometric scope advances, in-office treatment of anatomically narrow angles is becoming more accessible. Although it is tempting to presume that laser peripheral iridotomy (LPI) is the best treatment option for all patients with narrow angles, as it will sufficiently manage the condition and has been the traditional procedure of choice, we must be certain LPI is the best treatment option before making our recommendation. Consider the following case.

CASE EXAMPLE

A 63-year-old female presented for LPI evaluation with concern for anatomically narrow angles. She complained of reduced vision that was worse OD compared with OS, and stable floaters. She denied flashes of light and curtains or veils over her vision. Presenting VA was 20/70+ OD with pinhole to 20/30- and 20/30 OS with pinhole to 20/20. Updated refraction corrected her to 20/25 OD and 20/20 OS. Slit-lamp examination revealed mild to moderate cataracts OU. IOP readings have historically varied from 18 mm Hg to 24 mm Hg OD and from 16 mm Hg to 24 mm Hg OS over the past 3 years. Gonioscopy revealed narrow anterior chamber angles (Figure 1), which were confirmed with anterior segment OCT imaging (Figure 2). Posterior segment examination was unremarkable, as was the optic nerve OCT (Figure 3).

To effectively manage this patient, the provider must appropriately classify the diagnosis and determine the cause of her angle narrowing. A chronologic classification coined by David S. Friedman, MD, PhD, MPH, is as follows: primary angle-closure suspect (PACS), primary angle closure (PAC), or primary angle-closure glaucoma (PACG).[1] In this definition, PACS is diagnosed when there is failure to see posterior trabecular meshwork in at least two quadrants of the anterior chamber angle, determined by gonioscopy, in the absence of active closure or increased IOP. Once angle closure

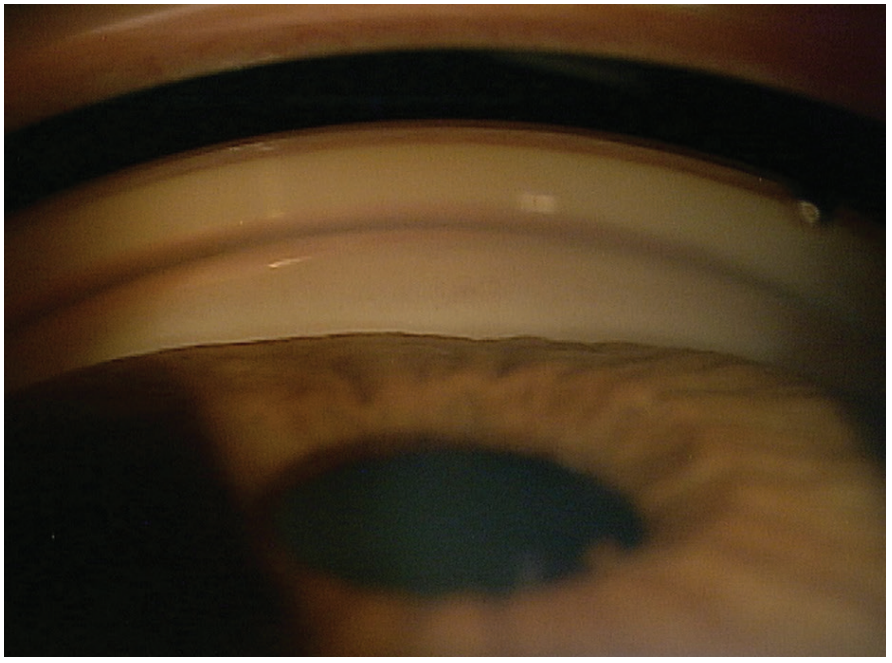

Figure 1. Gonioscopic view of the inferior angle showing the anterior trabecular meshwork as the most visible structure. This portion of the angle is narrow.

occurs (presence of peripheral anterior synechiae or elevated IOP), a diagnosis of PAC can be made; however, this diagnosis is only appropriate when no glaucomatous change can be detected. If glaucomatous change is noted, PACG can be diagnosed. In this patient's case, gonioscopy revealed a narrow, but open angle with normal IOP and no glaucomatous nerve damage. Thus, a diagnosis of PACS was made.

THE FOUR CAUSES OF NARROW ANGLES

For further classification of the narrow-angle patient, four basic causes of narrow angles and angle closure should be understood, including pupillary block, plateau iris, phacomorphic glaucoma, and malignant glaucoma. For some of these causes, an LPI is indicated, while for others, an LPI merely covers up the true problem.

Pupillary Block

The most common cause of narrow angles is a pupillary block mechanism, in which fluid accumulation in the posterior chamber occurs due to an apposition of the anterior surface of the lens with the pupil border. This scenario interrupts anterior movement of aqueous, and once this occurs, the peripheral iris moves anteriorly, narrowing the anterior chamber angle. In this situation, LPI is an effective treatment because it allows an alternative route of aqueous flow.[2]

Plateau Iris

Plateau Iris syndrome is an entirely different diagnosis that results from an anatomic abnormality. In plateau iris syndrome, anterior insertion of the iris root causes an anteriorly displaced peripheral iris that then narrows the angle. LPI is a less effective treatment for this type of narrow-angle patient because there is no abnormal pressure gradient to relieve by creating an alternative passageway. Instead, argon laser peripheral iridoplasty is the more beneficial treatment option, as it shifts the peripheral iris posteriorly.[3]

Phacomorphic Glaucoma

One of the more common causes of narrow angles in our middle-aged and geriatric populations is phacomorphic glaucoma, which results from an enlargement of the natural lens pushing the iris forward, consequently narrowing the angle. LPI is often unsuccessful at treating phacomorphic glaucoma, as the

AT A GLANCE

- Laser peripheral iridotomy is not always the best treatment option for all patients with narrow angles; consider the classification of the diagnosis and the cause of angle narrowing in your decision-making.
- There are four basic causes of narrow angles and angle closure: pupillary block, plateau iris, phacomorphic glaucoma, and malignant glaucoma.
- Pupillary block mechanism is the most common cause of narrow angles and is when fluid accumulation in the posterior chamber occurs due to an apposition of the anterior surface of the lens and the pupil border, which interrupts anterior movement of aqueous.

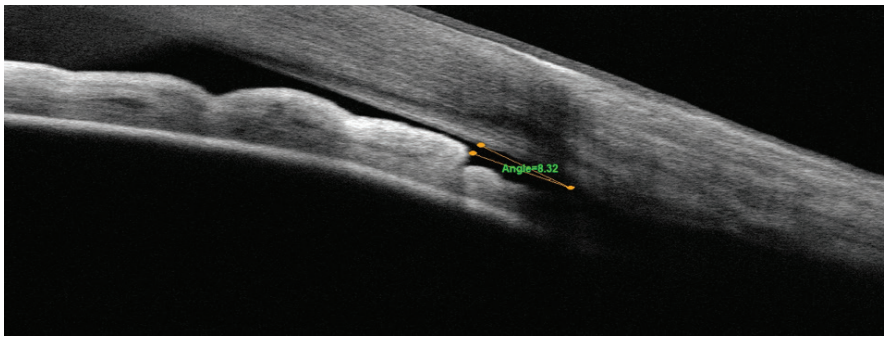

Figure 2. Anterior segment OCT confirming the presence of narrow angles.

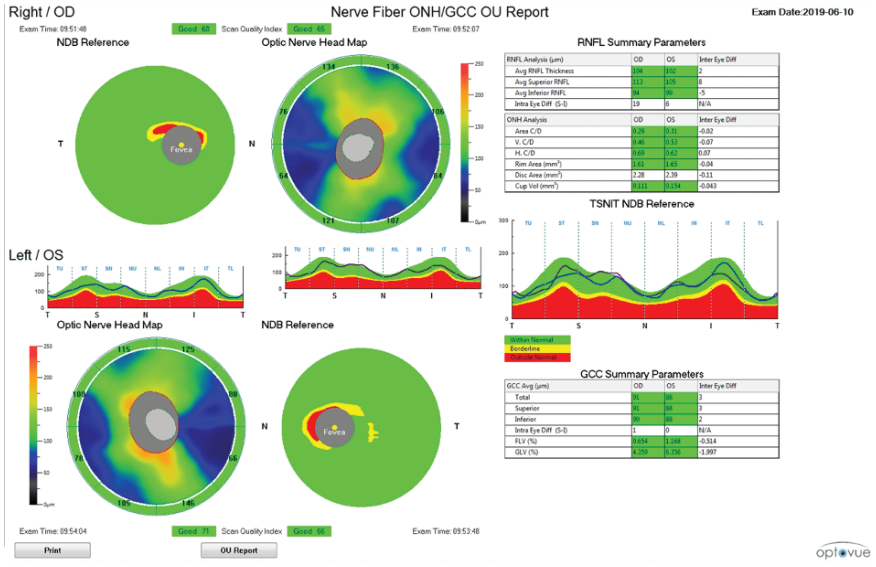

Figure 3. OCT and ganglion cell analysis showing normal structure, and therefore no presence of glaucoma.

offending agent is the physiologic lens; thus, cataract extraction is the preferred treatment.[4]

Malignant Glaucoma

A diagnosis of malignant glaucoma is rare, and is caused by aqueous accumulation posterior to the vitreous, classically following intraocular surgery. Treatment is more complicated for the patient with malignant glaucoma and may include topical cycloplegia or steroids, eventually resulting in surgical management, such as vitrectomy.[5]

DETERMINING TREATMENT

Because the underlying mechanism can be difficult to determine, it can be challenging to assess when an LPI is indicated or when other treatment options are better alternatives. Although the literature is sparse to solidify evidence-based decision-making in this area, some conclusions can be drawn from the data that are available.

For example, the Singapore study[6] recommends that LPI be considered in patients who have narrow angles accompanied by one or more of the following criteria: associated headache or pain, diabetes mellitus, other conditions for which frequent dilation is indicated, poor access to care or poor likelihood of follow-up care, or family history of angle-closure glaucoma. To balance these recommendations, the ZAP study[7] concluded that although LPI had a modest and statistically significant reduction in conversion from PACS to PAC, a large number of patients must be treated to prevent one angle closure event and an even larger number of patients to prevent vision loss. Also consider the data indicating that only 22% of PACS will convert to PAC within 5 years.[8] This evidence would suggest that LPI should not be the first tool practitioners reach for in the treatment of PACS.

The EAGLE study examined outcomes in patients with PACS who underwent cataract extraction versus LPI as first-line therapy. The results proved cataract extraction more effective, with only 21% of patients with PACS needing further treatment after cataract surgery compared with 62% of patients with PACS requiring further intervention following initial LPI.[9]

LET THE FINDINGS GUIDE YOUR TREATMENT DECISIONS

In the above patient case, the age of the patient, development of cataracts, and presence of a visual complaint indicated cataract extraction as the preferred treatment option based on the findings of the EAGLE study.[9] Cataract extraction, while proven more effective, will also mitigate additional patient complaints and therefore is the most beneficial treatment option.

So, what does this mean for the management of PACS? In an individual with anatomically narrow angles, use gonioscopy to determine the extent of narrowing and whether the angle is actively closed. Follow this with a glaucoma workup to ensure no nerve damage has occurred. A thorough anterior segment examination is vital to assess for the presence of lenticular opacity and visual complaint. In patients with anatomically narrow angles but no cataract, LPI can be considered, and recommendations from the Singapore study can be weighed.[6] If the patient

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> THE MOST COMMON CAUSE OF NARROW ANGLES IS A PUPILLARY BLOCK MECHANISM, IN WHICH FLUID ACCUMULATION IN THE POSTERIOR CHAMBER OCCURS DUE TO AN APPOSITION OF THE ANTERIOR SURFACE OF THE LENS AND THE PUPIL BORDER.

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has a lenticular opacity in the presence of narrow angles or is in the age demographic in which imminent lens changes can be assumed, then cataract extraction must be discussed as the preferred treatment method. ■

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NATE R. LIGHTHIZER, OD, FAAO
- Professor, Associate Dean, Director of Continuing Education, and Chief of Specialty Care Clinics, Oklahoma College of Optometry at Northeastern State University, Tahlequah, Oklahoma
- Member, *Modern Optometry* Editorial Advisory Board
- lighthiz@nsuok.edu
- Financial disclosure: None relevant

AUBRY TACKETT, OD
- Cornea and Contact Lens Resident, Northeastern State University, Tahlequah, Oklahoma
- stomprud@nsuok.edu
- Financial disclosure: None