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GLAUCOMA

MD Roundtable: Expert Tips for Assessing the Narrow Angle

MODERATED BY SANJAY G. ASRANI, MD,

WITH PAUL J. FOSTER, FRCS, PAUL F. PALMBERG, MD, PHD, AND ROBERT RITCH, MD, FACS

This article is part of an occasional series of MD Roundtables, in which a group of experts discuss a topic of interest in their field. This month, Sanjay G. Asrani, MD, of the Duke Eye Center, leads a roundtable on diagnosing the narrow angle. He is joined by Paul J. Foster, FRCS, of University College London, Paul F. Palmberg, MD, PhD, of Bascom Palmer Eye Institute, and Robert Ritch, MD, FACS, of the New York Eye and Ear Infirmary. Following are edited excerpts from their conversation.

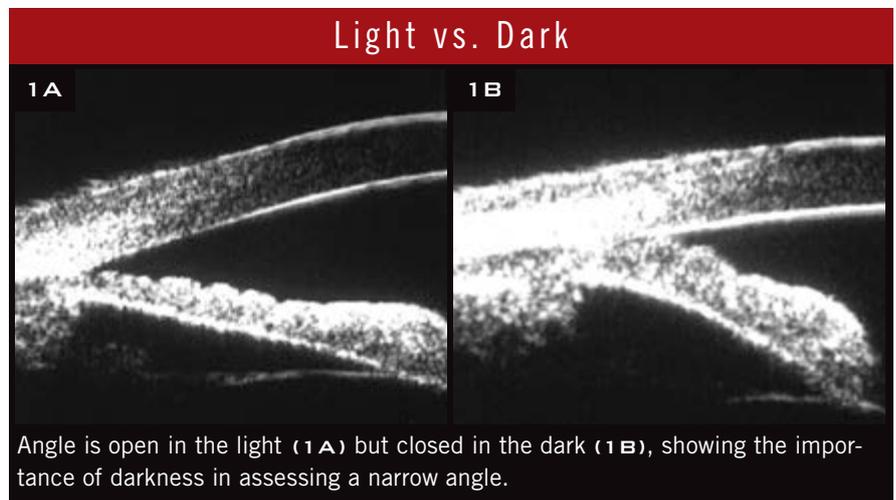
Next month, these experts discuss when to consider laser iridotomy for narrow angles.

An Increase in Narrow Angles?

Dr. Asrani: Do you feel that you are diagnosing narrow angles with greater frequency than your colleagues over the past five to 10 years?

Dr. Palmberg: I take it you're asking if we're finding a lot of cases of angle closure that were referred to us for poor IOP [intraocular pressure] control by doctors who thought the patients had open-angle glaucoma. Often, at cocktail parties, glaucoma specialists get together and say, "What's wrong with the general ophthalmologists? They're missing a lot of angle closure." And I usually say, "Well, what's wrong with us that we haven't been teaching gonioscopy and related techniques well?"

When the first *Preferred Practice Pattern* for angle closure was written,



we had a lot of practical information on how to do gonioscopy. Unfortunately, in the subsequent issues, much of that practical information on critical features somehow dropped out, and it would be nice to get it back in: for example, no light through the pupil, no fixation target, doing it in a dark room, using a Zeiss-type lens, and using the parallelepiped method.

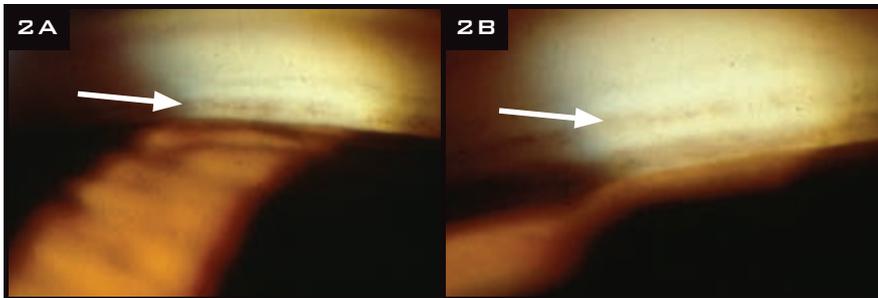
Status in the U.K. **Dr. Asrani:** Paul Foster, what is your take on this?

Dr. Foster: In the United Kingdom, the system is probably slightly different. We tend to get fewer referrals from general ophthalmologists. More of the time, the referral has come from an optometrist direct to a glaucoma specialist. I think that glaucoma specialists in the U.K. now are fairly sensitive to the idea that everybody should have gonioscopy. And I think the standards of gonioscopy have improved dramatically in the last 10 years.

So now, it's uncommon for me to get referrals from ophthalmologist colleagues where I think that they've missed angle closure. But, certainly, there are a lot of cases that come from optometry where they have been referred for high pressure, and no assessments of the angle were performed.

Second, Even Third, Opinions. **Dr. Ritch:** About 30 years ago, there was so much angle closure that was undiagnosed and misdiagnosed. Patients would be referred with chronic open-angle glaucoma or primary open-angle glaucoma, but they had 90 percent PAS [peripheral anterior synechiae]. And either people recognize that better now, or I'm not getting that many referrals.

I still see a few patients who have been misdiagnosed, but mostly I see people who have already been diagnosed—they have been told by one doctor that they had narrow angles but



WHAT LINE IS THIS? (2A) Is this somewhat discontinuous pigmented line (arrow) the pigmented band of the trabecular meshwork? The angle appears to be fairly open, grade 3. **(2B)** With indentation gonioscopy, the angle opens, and the same line is clearly shown to be a Sampaolesi line, with a splotchy, “salt-and-pepper” appearance; below it is the true trabecular meshwork line, a continuous line with a “fine powdered brown sugar” appearance.

didn't need an iridotomy, and the next one told them they had narrow angles but needed an iridotomy, and another would tell them they didn't have narrow angles, not to worry about it.

And I'll give them the definitive decision. You know, I had one patient come in, and her husband was taking all these notes. I said, “Look, you'll get a copy of the consultation letter. Your husband doesn't need to take all these notes.” She said, “That's not my husband—that's my lawyer.”

Demonstrating Angle Closure

With Video. Dr. Palmberg: For patients like that, I have found it helpful to have a video camera on my slit lamp. I show them the angle, and then I make sure that there is no light going through the pupil. They sit there—the patient and, usually, the husband, not the lawyer—and watch the angle close over a course of about eight to 10 seconds in the dark. And then, because they have seen it, they believe it. (See Fig. 1.)

You can show them how dynamic it is and why it was that one doctor on one occasion and one at another time might actually have seen different things, depending on the state of hydration and certainly on the technique with light through the pupil. So if any one doctor *does* see the angle close, that trumps the observations of others. In that way, patients don't feel judgmental against the other doctors.

Dr. Asrani: I certainly agree, and that's why I asked the question. I have been seeing patients who come in for

a second opinion because of poor IOP control, and they are being treated by other glaucoma specialists when I diagnose that they actually have intermittent angle closure or narrow angles. And they are surprised that the other glaucoma specialists did not pick it up. So Paul Palmberg, I agree entirely with your ability to show the patient's family members the condition.

With Teaching Scope. Dr. Asrani: Also, sometimes I use the teaching scope that I have on all the slit lamps. I encourage the family members to look through it when I examine patients who are skeptical or doubtful of this diagnosis. I show this to them on anterior segment OCT by turning on the lights and then turning off the lights, and then that convinces them with a lot more certainty. Paul Foster, do you have a technique that you use in the U.K. to convince patients, or do they take your word for it?

With OCT. Dr. Foster: I've found that it's difficult to illustrate the angle closure to the medical layman. So I agree that anterior segment OCT is extremely useful, with scans made in the light and in the dark, often showing an open angle in the light and closed in the dark. And as soon as patients see those images, they become convinced.

Expert Tips for Gonioscopy

Dr. Asrani: Bob, you pioneered the concept of doing gonioscopy in the dark and promoted it. Unfortunately, very few people have adopted it. Would you be able to share a few more tips on

your technique of gonioscopy that Paul Palmberg started to talk about?

Darkness Is Essential. Dr. Ritch: Yes. I agree with everything that Paul said. It's really important, number one, to do gonioscopy in a completely darkened room. I tell this to my fellows and go over it over and over again. And after they've done six months of a fellowship, I'll walk in on them and they tell me it's a grade 2 angle; but when I turn the lights out and do gonioscopy, the angle closes up. And I say, “Did you do it in the dark,” and they say yes. Then I say, “Real dark? I mean the lights completely out; the computer screen off?” And they say, “Oh, uh, no, just mildly dark.”

There should be no light through the pupil. So the main thing is to use a small slit beam—a little square slit—and look first in the inferior mirror. The superior angle is the narrowest 98 percent of the time. If the superior angle is more open than the inferior angle, I consider that a potential sign of exfoliation syndrome.

Dr. Palmberg: And don't use a fixation target because that alters the pupil.

Be Sure to Wait. Dr. Asrani: I really encourage my fellows to wait 10 seconds after the gonio lens has been placed on the eye, so as to let the constriction of the pupil get relaxed, to lose the effect of accommodation. When the pupil is in the midedilated position, that is when you see the angle closed, and that has really allowed me to diagnose a lot more of these narrow angles than before. I do exactly the same thing as Bob and Paul, putting the parallelepiped light into the mirror, avoiding the pupil altogether.

Dr. Ritch: I've concluded that 10 seconds is not enough in some cases. Sometimes I have to wait two minutes. And after two minutes, they finally get narrower and narrower and then close up to the trabecular meshwork.

Dr. Palmberg: I guess that's the point of it, Bob, that if you see it steadily narrowing, you wait to see where it's going to finish.

Getting Started. Dr. Ritch: I started doing indentation gonioscopy when I

was a fellow, and I found that you have to look at about 100 patients before you stop sliding off the cornea and get to where you can manipulate the lens comfortably without having to watch your hand.

You should start with cooperative young patients with open angles who can look straight ahead without squeezing [their eyelids]. Verify the angle structures in the superior mirror, and then look at the peripheral iris, which should be slightly convex, and press lightly and watch the peripheral iris become concave. Then, back off the iris with the gonio lens until the iris no longer changes configuration but you can still see the structures. And now you know that you're just resting on the cornea. And once you're used to the superior mirror, you can go on and do the other mirrors.

Dr. Palmberg: It's also helpful to look a little bit in the direction of each mirror—about 15 degrees so that you're seeing over any curvature of the iris.

Avoid Inadvertent Pressure. **Dr. Palmberg:** I find it very important to have both the patient and examiner sitting upright. It's also important to support the weight of your elbow and your hand and to have a couple of fingers on the patient's cheek to avoid inadvertent pressure on the cornea. And it keeps you from sliding off into the nostril or something and embarrassing yourself with the lens.

Dr. Ritch: I tell my fellows to back off until you just see an air bubble coming under the gonio lens, and then you know you're resting on the cornea. And you do not want any inadvertent compression because if you press too hard, then you can open the angle. So the back-off step is very important.

Stabilize the Hand. **Dr. Palmberg:** Making contact with the patient with the side of your hand lets you apply the lens, holding it with your thumb and a couple of fingers—you don't do it automatically. It takes a little time and thought about how to get your hand up there so that you can touch with no pressure.

Dr. Ritch: Another thing I like to

do is wrap my little finger around the slit-lamp bar.

Dr. Palmberg: That can help stabilize the fingers—stabilizes you, too.

Importance of Compression

Dr. Asrani: I find that there is one technique that most of my fellows have not learned: When they see an open angle, they don't feel the need to compress. And I insist that they should always perform compression gonioscopy [also called indentation or dynamic gonioscopy], even if they think that the angle is open.

Many times, because of the pigmented Schwalbe's line, the angle may appear open when it's actually totally closed. And to the surprise of many of my fellows, they find, "Oh, this patient has two scleral spurs." But it's only because they've never compressed and couldn't detect the true trabecular meshwork.

Whys and Hows of Compression.

Dr. Palmberg: Compression gonioscopy is very important in being able to decide whether the angle closure, once you see it, is appositional or synechial.

But it's also very important for just detecting angle closure because in a lot of African-American or darkly pigmented Hispanic patients, the iris is thicker and flatter, even when there's angle closure. It can look like a grade 3 angle, but it isn't. It's a Sampaolesi line that's changing curvature from the cornea to the angle so that you have a shelf on which the large pigment granules can sit.

But the character of that pigment is different. It looks like fine, powdered brown sugar over the trabecular meshwork, or more like salt and pepper. It's a little discontinuous over the Sampaolesi line (Fig. 2). So, particularly in people with dark-colored irides, even if it looks open, you really should push because you could be surprised that there was a fuller line here, as Sanjay just pointed out. And that is another one of the major reasons that people miss angle closure.

Dr. Ritch: Yes, I agree with both of you on that. But I find that they don't have to be patients with really dark iri-

des. About a third of my patients have exfoliation syndrome. The fellow will look and call it a grade 4 open angle, but even without indentation, you can see that what they think is pigment on the trabecular meshwork is pigment on Schwalbe's line as Paul said. And then you indent, you open up, and you see the trabecular meshwork and the scleral spur. That's very, very important.

The Parallelepiped Method.

Dr. Palmberg: And you could get a clue by using the parallelepiped method. When you shine a very thin, narrow beam over the cornea, the light will appear three dimensional, and it will penetrate the cornea.

When you get down to Schwalbe's line, it will become a two-dimensional figure of light over the trabecular meshwork, and it will be a little less bright over the trabecular meshwork because the pores in the trabecular meshwork—the openings between the beams—are allowing some of that light to get in there and scatter and not come back to you. And then of course, it becomes bright again down at the scleral spur if the insertion of the iris is behind the scleral spur. This can really help to identify the landmarks. ■

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