

Letters

Simple Myopic Astigmatism

The following reader-author exchange refers to an editorial by Eric Donnenfeld, MD, titled "Residual Astigmatism Has No Redeeming Value," which appeared in our May 2014 edition.

It is not often that I disagree with the likes of Dr. Donnenfeld, but the title of his recent editorial caught my attention. In a perfect world, we might all operate on perfect patients with pristine corneas, healthy retinas, and the financial resources to pay for all of the latest technology (femtosecond lasers, intraoperative aberrometers, premium IOLs, etc.) being pushed upon us—in this publication and others—by industry. Many practices trumpet having high conversion rates to premium IOLs of 30%, 40%, and even 50% and more, chasing the ever-elusive holy grail of emmetropia.

In the real world, where resources are limited, patients have coexisting morbidities, and (God forbid) they might actually enjoy wearing spectacles, the absolute elimination of astigmatism may not be such a great idea for every patient. Correcting astigmatism to create pseudophakic emmetropia in every eye can create instant, absolute presbyopia, and not everyone appreciates the sudden need for readers.

Moreover, not everyone can afford the plethora of technological wonders to which we as surgeons seem to be addicted, and this raises the following question: what is the best way to manage the astigmat with cataracts who refuses (or cannot afford) to have his astigmatism corrected?

To answer this question, let us look at an example. Suppose you have a patient who refuses to have his cylinder corrected at the time of cataract surgery, with, let us say for the sake of argument, 3.00 D of corneal astigmatism. If, like most of us, you aim for a postoperative spherical equivalent near plano, I believe that you are doing that patient a disservice and missing an opportunity to have a happy patient.

If you aim for a spherical equivalent of plano (or very low myopia), you are likely to end up with a refraction like $-1.50 +3.00 \times ABC$ (or, in minus cylinder, $+1.50 -3.00 \times XYZ$).

This patient now has mixed astigmatism, with one myopic meridian and one hyperopic meridian. With

absolute, pseudophakic presbyopia, the hyperopic meridian contributes little toward useful vision, even though the circle of least confusion is on the retina.

Alternatively, for a happier result, you can take this same patient and aim for simple myopic astigmatism. To do so, the spherical equivalent target needs to be more myopic than what most of us are used to for traditional cataract surgery.

To make this strategy work, aim for a *minus* spherical equivalent target refraction that is one-half the magnitude of the cylinder. For our hypothetical patient with 3.00 D of corneal cylinder, we aim for -1.50 D sphere (0.5 of $3 = 1.5$, make the target myopic [minus]), which should yield an outcome like $-3.00 +3.00 \times ABC$ (or, in minus cylinder, plano $-3.00 \times XYZ$).

With simple myopic astigmatism, you now have one meridian focused on the retina, while the corresponding steep meridian has useful myopia for near. Using this strategy, relying upon the multifocal properties of the astigmatic cornea, I have found that patients often have uncorrected far and near vision rivaling that of some of our most expensive multifocal or accommodating IOLs. At no extra cost to your patient, you have exceeded his or her expectations.

I should mention that the example given is simplified for the purposes of argument and that one should, of course, take into account one's surgically induced astigmatism when planning surgery.

Even in those practices with extremely high conversion rates for premium lenses, there are still significant numbers of patients who choose not to have their astigmatism corrected, and it behooves us to do our very best for these patients. Thus, with respect, I have to disagree with Dr. Donnenfeld's assertion that residual astigmatism has no redeeming value. Using the strategy I have outlined, targeting simple myopic astigmatism—rather than emmetropia—can leverage the astigmatic properties of the cornea to our advantage.

RICHARD SCHULZE JR, M PHIL (OXON), MD
Savannah, Georgia

Dr. Donnenfeld responds.

I enjoyed your letter, Dr. Schulze (or, if you would not mind, Richard, and you may call me Eric), and I thought

you made some very good points. I agree that there are times that a little astigmatism can be a good thing. My good friend, Douglas Koch, MD, who knows a thing or two on the subject, has recommended leaving 0.25 D of with-the-rule cylinder in his postsurgical cataract patients, as, over time, it will likely regress. With that said, I continue to believe that astigmatism has no redeeming value but will modify this statement to include the addendum that this applies to patients who wish to have the best distance or near visual acuity without glasses. I completely agree with you that patients who do not care about wearing glasses do not require their astigmatism to be corrected. However, for those patients who care about uncorrected visual acuity, residual astigmatism, in my opinion, is the number-one rate-limiting issue between happy and unhappy patients.

I do disagree with one of your assumptions, and that is your suggestion that ophthalmic surgeons, journals, and industry are driving other surgeons to use the myriad of new technologies available to us. I firmly believe that patients are requesting (and, in my experience, often demanding) the best vision possible without glasses and that this is driving innovation to deliver on patients' expectations. Many patients, but to your point, not all patients, are demanding improved results after cataract surgery, and for these patients, residual astigmatism has no redeeming value. Thanks again for the well-thought-out letter, allowing me to correct my statement, and I will look forward to continuing our conversation at the next meeting over a cup of coffee or a beer. ■

ERIC D. DONNENFELD, MD
Rockville Centre, New York