

PSS NEWS

A Distance Learning Format for Continuing Medical Education in Optometry

Contact Lens Options for Your Presbyopic Astigmatic Patients

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Learning Objectives:

1. To review the basic epidemiology of patients with astigmatism and presbyopia
2. To discuss refractive options for astigmatic presbyopic patients
3. To discuss contact lens options for astigmatic presbyopic patients

We have seen many changes in multifocal contact lenses over the past decade. Some progressive practitioners have realized the growth potential with the aging population. However, many practitioners still avoid multifocal contact lenses due to negative prior experiences or a fear of failure or increased chair time with complex designs. This is especially the case for our astigmatic patients who are having problems with their near vision. Many of these patients have been successfully wearing contact lenses for many years and would like to continue doing so. In years past, we would have told them to use reading glasses over their contact lenses or to do monovision. However, we now have a lens modality which will allow your patients to dramatically decrease their dependence on reading glasses – toric multifocal contact lenses.

Between four and five million people turn 40 each year, and there are now over 100 million patients who suffer from presbyopia. Roughly one-third of these patients have astigmatism as part of their

visual correction. Obviously not all of them are appropriate candidates for toric multifocal contact lenses. So how do you find out which ones you will fit with this new modality in contact lens wear?

What you need to do is have a protocol for screening potential multifocal candidates. This should include ocular factors such as health, refractive status, etc, but it should also include an assessment of a patient's motivation to ascertain whether he or she will comply with the visits and lens changes necessary for success. Part of this motivation should include your patient's expectations. If he or she demands precise crisp vision at all distances, the result will probably be failure. Your role as their doctor is to make sure that the patient realizes before the fitting process begins that any correction for presbyopia requires compromise. Neither contact lenses, eyeglasses, or refractive surgery will work for all situations. With presbyopia, all options require some compromise. In short, the patient should understand up front that there is nothing

that you can do to restore their vision to pre-presbyopic levels. Once your patient accepts this notion, then you can proceed.

Practitioners should not avoid fitting bifocal or multifocal contact lenses because of a fear of costs of materials. Today's design and parameter availability and the very generous exchange or cancellation policies of most manufacturers allow multifocal fitting with virtually no risk. For example, Cooper Vision offers a "It's Okay Guarantee" in which you can return Cooper Vision lenses within the first 100 days for a 100% refund. This was one of the drawbacks to previous toric multifocals where you ordered a lens and if it didn't work, you had to rely on returning the lens to make sure that your account was given credit for the return. The newly released B&L multifocal toric lens is also a monthly modality and comes in a fitting set to make the process easier.

In terms of the increase chair time, you should set your fitting fees to appropriate levels. Just remember, patients will pay premium prices for premium products as long as there is value in what is being done.

General Design of Toric Multifocal Lenses

Regardless of modality, soft toric lenses require some means of keeping their cylinder axes properly aligned with that of the patient's refractive error. Most employ one of three methods, or a combination of these three:

Prism ballasting. This common method of stabilization entails adding more lens material mass to the inferior portion of the lens, making that part of the lens thicker. Doing this helps minimize the

lens from rotating out of position without being too uncomfortable to the patient. The only drawback is the introduction of base down prism into the contact lens, which is relatively minor. Prism ballasting is one of the more common methods of lens stabilization, as it offers a good compromise between patient comfort and good stability.

Lens truncation. This design involves cutting off the bottom portion of the lens, leaving it flat or truncated and it typically used in gas permeable lenses. The flat edge of the lens usually aligns with the lower lid, and the bottom "corners" help hold the lens in place. Lens truncation is an effective stabilization system, but it tends to make the lens less comfortable.

Thin zones. This design is also called "dynamic stabilization" and "double slab-off." It involves removing lens material at both the apex (superior portion) and base (inferior portion) of the lens creating thin zones at the top and bottom. These thin zones allow the eyelids to exert pressure on the lens and hinder its rotation. This design offers the greatest comfort of the three stabilization methods, but it also provides the least resistance to rotation.

The two basic bifocal/multifocal design concepts are translating, or alternating, image and simultaneous image. With the alternating image design lenses, the top of the lens usually has the distance vision area and the bottom portion is for near vision. This is an easy concept to explain to the patient because many of them are already familiar with the concept of flattop bifocal eyeglasses. The way this design works is that when the patient looks straight ahead, they see well at distance and when patients look down, the lens translates so the near correction moves into the visual axis. The problem is that soft contact lenses do not translate

well. Thus, translating designs are currently available only in RGP designs.

With the simultaneous image design, the retina receives input from multiple distances at the same time with different clarity of images. Depending on where the patient is looking, the visual system and brain must determine which image is most important and suppress the extra images. Simultaneous image multifocal lenses can be aspheric, concentric or diffractive and is the most common design employed by soft multifocal lenses.

With a concentric design, a central zone of distance or near power focus is surrounded by one or more rings that contain the opposite power. Some lens types alternate distance and near in a repeating pattern which helps to improve pupil coverage and visual input with variations of illumination and pupil size.

Fitting Approaches

For those patients who are willing to try multifocal lenses, formulate a plan for satisfying their visual needs. There are many options for achieving a successful fit. With the total bifocal fit, each eye gets the maximum vision for distance and for near. Ideally this is the best approach, but in practice it rarely works out this way. In reality trying to fix both eyes perfectly for distance and near vision tends to create vision at both distances which is unacceptable. Also consideration is the concept of dominance of the visual system. Anytime you are fitting patients with multifocal lenses, you should always take the time to note which eye is dominant for the patient. This is easily determined by methods such as the simple "hole in the hand" test. Another simple method is the fogging technique where plus power

over-correction is added to each eye in turn, and the eye that accepts the most plus while viewing a distance target is considered the non-dominant one. What typically happens when fitting any multifocal lens – particularly in the advanced stages – is some modification of monovision where one is more corrected for distance and the other better suited for near tasks.

Monovision

In the past, monovision was the method of choice for any presbyopic patient with astigmatism (and for many spherical patients as well). This can give good vision at various distances, and it is less time-consuming and less expensive for patients. Monovision may work for an emergent presbyope where a simple .50 or .75 D under correction in the non-dominant eye will enhance the ability to read. However, as the patient gets older and the need for more ADD increases, monovision has 2 major drawbacks:

- Provides diminishing levels of depth perception and stereopsis. This often leads to unsatisfactory levels of vision, particularly for nighttime driving.
- Provides very little for intermediate vision, which is especially important for patients who work on the computer.

Bifocal or multifocal contact lenses can eliminate many of these difficulties. In general, multifocal lenses allow a more equal image size and quality between the two eyes and cause less of a disruption in depth perception. Plus, you can achieve much better overall quality of vision with multifocal lenses.

Modified Multivision

Modified multivision is a good way to solve the dominance issue when the dominant eye is given the better

correction for distance and the non-dominant eye is given a slightly greater effective add power. The major difference between this and monovision is that both eyes are fit with multifocal lenses so both see relatively well for distance and near. This gives patients better overall vision and is much easier to adapt to. Many manufacturers – such as Cooper Vision - have utilized this approach in their designs and fitting nomograms to simplify and enhance fitting success.

Factors For Success

Patient Motivation Both patient and practitioner factors influence on success rates. One of the most important indicators for a successful multifocal fit is the patient's motivation to wear bifocal/multifocal contact lenses. Unlike spherical lenses which will give patients almost-instant gratification, the process can be more drawn out in multifocal fitting and even a little longer in toric multifocal fitting. It is not uncommon to need at least three or four follow-up visits to fine-tune vision and other wearing issues. The patient must be educated about this up front and should be assured at every visit so they do not give up. If they think one visit will result in perfect vision at all distances, they will likely fail.

Doctor Motivation. From a practitioner's standpoint, be positive in your approach. If you get frustrated, the patient will be even more frustrated and tend to give up more easily. Sometimes, what looks like a failure will quickly turn into a successful fit after a few minor adjustments. Also, be sure that the patient's external ocular health is sound. Resolve issues with the lids, cornea and conjunctiva to ensure a successful physiological result. Ocular surface

dryness is a common complaint in the presbyopic patient and should be addressed at the onset of the fitting process. In our practice we will educate every patient at the beginning that wearing contact lenses may result in the need for periodic rewetting drops. Fortunately, there are brands such as the Proclear Compatibles which are extraordinary in their performance for patients with discomfort problems relating to dryness. Also, take into account conditions such as cataracts and macular degeneration, both of which can impact best-corrected visual quality and affect success of toric multifocal fitting.

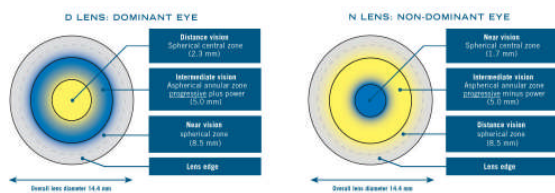
Although you want to remain confident and reassuring when fitting toric multifocal lenses, at the same time be sure to set realistic goals and expectations for the patient. Be up-front with patients as to what the lenses will and will not do. I often employ the 80/20 analogy, i.e. the patient can expect that the multifocal contact lenses will do what the patient needs roughly 80 percent of the time, but 20 percent of the time the patient will need to supplement. This supplement may take the form of reading eyeglasses to enhance very fine print, distance glasses to enhance nighttime vision, or even removing the contact lenses and using the eyeglasses instead. As long as the patient knows what to expect, many times they will adjust

The pupil factor. Patients with very small pupils will have difficulty utilizing anything but the central portion of a contact lens. This can be a problem with an aging patient with increasingly miotic pupils. At the beginning of the fitting process, be sure to quickly determine pupil size to see if your patient is a suitable candidate. In general, patients with a pupil size less than 4.0 mm are poor candidates. One quick way to check

for pupil size versus centration of the lens is to observe the red reflex through a retinoscope or direct ophthalmoscope.

CooperVision Proclear Toric Multifocal

This is the lens design of choice for presbyopic patients with astigmatism. It features a monthly disposable replacement schedule which is easy for patients to remember. CooperVision describes the design of this lens as "Balanced Progressive Technology." This aspheric design lens employs a center-distance design lens (D lens) for the dominant eye and a center-near lens (N lens) for the near eye. The D and N designation is important to note when fitting and ordering lenses.



- Two lens system
 - “D” Lens for the Dominant Eye (distance, intermediate and near vision)
 - “N” Lens for the Non-Dominant Eye (near, intermediate and distance vision)
 - Both lenses feature a spherical central zone, and aspheric annular zone and a surrounding spherical peripheral annular zone

There is also a wide range of adds (+1.00D to +4.00 D in .50 D steps) which gives practitioners many parameters to choose from. Between the basic lens and the XR, the sphere power ranges from +20.00 D to –20.00 D and cylinder power up to 5.75 D. It is available in two base curves – 8.4 and 8.8. The lens features a back surface prism ballast to help

stabilization. The trial lens is free to order, although it can take 10-12 days to get because it is a made-to-order lens. The revenue product comes in 6-packs.

As an added bonus, the Proclear (omafilcon) lens material is FDA approved for dry eye, which presbyopic patients are more likely to have. It’s made possible by PC Technology, which creates a unique material containing molecules of phosphorylcholine (PC), a substance found naturally in human cell membranes. These molecules attract and surround themselves with water, keeping Proclear lenses moist and comfortable. Proclear lenses are the only contacts with FDA clearance for the claim: “may provide improved comfort for contact lens wearers who experience mild discomfort or symptoms relating to dryness during lens wear.”

The recommended fitting protocol for these lenses is as follows:

- Step 1: Determine the dominant eye.
- Step 2: Apply the appropriate D lens in the dominant eye and appropriate N lens in the near eye.
- Step 3: After allowing the lenses to settle, assess the rotation and compensate using the LARS rule (reviewed later).
- Step 4: Evaluate the lens performance in normal lighting conditions binocularly first, then monocularly.

To determine if the visual acuity will satisfy the patient, CooperVision recommends using the following fitting matrix:

Distance	Near
D Lens 20/20	N Lens 20/20
N Lens 20/40	D Lens 20/40

If your patient's visual acuity does not meet or exceed the level of vision in this matrix, refine the powers on the appropriate lens. While this may sound similar to monovision, the balanced progressive design gives your patients more comfortable vision at all distances.

Step 5: Send the patient home and let them adjust to the lenses in the real world. When they come back make the smallest adjustment possible, if one is needed. A .25 D change in a multifocal toric lens can make a HUGE difference.

B&L Ultra Multifocal Lens For Astigmatism

This monthly replacement lens features a unique 3-Zone Progressive design which is designed to optimize visual clarity at distance, intermediate, and near vision.



This is the suggested fitting protocol:

BAUSCH + LOMB ULTRA[®]

MULTIFOCAL
for
ASTIGMATISM

FITTING GUIDE

STEP 1: Update spectacle refraction and Add power

STEP 2: Select **toric lens** power
(adjusted for vertex distance if necessary)

STEP 3: Select **Add power** following guidance below:

ADD SELECTION:

SPECTACLE ADD	BOTH EYES
+0.75D to +1.50D	Low Add
+1.75D to +2.50D	High Add

See package insert for more information.

EVALUATE THE LENS FOR SUCCESS

- Allow trial lenses to equilibrate for at least 10 minutes before assessing fit and vision
- Confirm axis orientation
- Evaluate distance and near vision binocularly in normal room illumination
- If vision at distance and near are satisfactory, dispense lenses and schedule follow-up exam within 1-2 weeks

Fine-Tuning Your Fits

Utilize Your Resources. Follow the fitting guides for these lenses and make use of consultation services. While we all can take the time and figure these things out by themselves on a trial-and-error basis, you can save time, money and frustration if you follow guidance based on trial and error and thousands of fits.

Assessing Rotation on the Toric Bifocal Lens

This is no different than it is for regular toric contact lenses. All toric lenses have their own specific marking to allow practitioners to assess lens rotation. Many put their markings at 6 o'clock, while others put them at 3 and 9 o'clock. When the markings are ideally aligned, the cylinder axis is located as marked on the trial lens. If the markings are rotated, so is the cylinder axis. We can learn to compensate for rotation by visualizing the rotation as clock hours where each clock hour is equivalent to 30 degrees. When a particular lens does not align properly, we can compensate for lens rotation via the LARS rule: Left Add Right Subtract. Clockwise rotation means the bottom portion of the lens has rotated to the left. Therefore, we add those degree increments to the lens axis when ordering the diagnostic contact lens. Counterclockwise rotation means that the bottom portion of the lens is rotated to the right and this value is subtracted when ordering the diagnostic contact lens. For example, for a refraction of -3.25 -1.75 x 90 and a diagnostic lens rotation 20 degree clockwise, we would order a contact lens with power -3.00 -1.75 x 110. This assumes that when the new lens is placed on the eye, the lens will again rotate that same 20 degrees clockwise, and will make the effective axis at 90.

Be Patient

Contact lens manufacturers have always recommended that we allow lenses to settle for 10 to 15 minutes before assessment. With the increased pressure to see more patients, many of us sometimes decrease that time to 5 to 10 minutes. While for spherical lenses this may not be a problem, when fitting toric multifocal lenses, the wait is well worth it. The patient's vision improves over this time (usually the near vision clears sooner than the distance vision). Tell the patient that some of the vision will clear up after 15 minutes or so, but the majority will take several days.

Being a simultaneous vision design, the Proclear Toric Multifocal features a design in which the distance, intermediate, and near light enter the pupil at the same time. The brain then pays attention to the light it needs (such as distance light rays while driving). Pupil size influences the amount of light exposed to the retina. When measuring acuity and performing over-refractions, try to simulate the lighting conditions the patient operates under most of the time. This usually means turning up the lights in the exam room. I generally use illumination slightly brighter than that found in a fine restaurant during dinner.

Think Outside the Box

There may be times when a patient (especially an early presbyope) wants better distance vision and two D lenses may work better than the conventional D and N combination. Using this modality will work for many patients to give them useful computer and limited reading vision. This is the method I start with for patients who want crisp distance and computer vision and don't mind the occasional reading glasses over contact

lenses. Similarly, two N lenses may be necessary for an older presbyope who has a higher add and is exacting about near work and not as critical about his distance vision. These patients generally wear their contact lenses all day at work and then put eyeglasses on over the contact lenses for driving or watching television. Two N lenses are the exception to the rule, but don't be afraid to try it if the patient complains about near vision. Again, work with your patient to find out what is the most important for their lifestyle and come up with a plan that fits into their world. Remember your goal is not necessarily 20/20 at all distances, it is 20/happy.

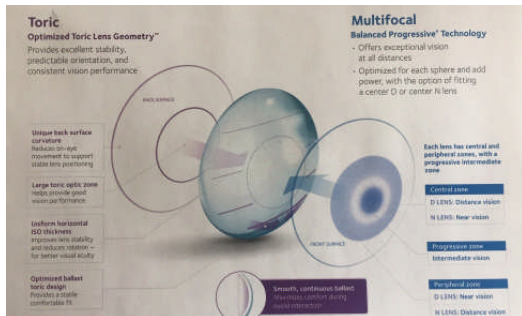
Test vision under binocular conditions

This not only improves visual performance, it provides a truer measurement of how the patient sees under normal conditions. The reality is that patients don't walk around in dim illumination with one eye covered so why test that way? I explain to patients that when it comes to multifocal soft lenses, two eyes are much better than one. This helps patients overcome complaints pertaining to vision differences between the eyes which often happens when utilizing modified monovision techniques.

Over-refract multifocal lens wearers using loose trial lenses. Also consider using flippers, which have minus and plus lenses of the same power mounted on opposite sides of the flipper holder. Flipper lenses allow us to easily demonstrate changes to the prescription in a normal setting. As an added bonus, you don't have to worry about pupil size effects and proximal accommodation as with a phoropter.

What's New?

Later this summer, Cooper Vision is expected to launch the Biofinity Toric Multifocal.



This lens will be available in sphere powers ranging from +10.00D to -10.00D, cylinder powers from -0.75D to -5.75D and four add powers (+1.00, +1.50, +2.00, and +2.50). It combines an "Optimized Toric Lens Geometry" with the "Balanced Progressive Technology".

Last Thoughts

Fitting astigmatic presbyopic patients with contact lenses is a challenging task but one that is satisfying and lucrative. Lenses such as the Cooper Vision Proclear Toric Multifocal and Biofinity Toric Multifocal and B&L Ultra Multifocal For Astigmatism make that task a whole lot easier.

CONTINUING EDUCATION QUIZ

This article is worth two (2.0) continuing education credits. This COPE-approved program is accredited by the University of Alabama at Birmingham College of Optometry.

Once you have registered for the course, you will be given an access code and go to www.flexiquiz.com where you will take the quiz. To earn credit, you must receive a grade of 70% or greater.

Please note that all 50 states have different rules and regulations concerning the acceptance of correspondence/internet continuing education. Please verify with your state board of optometry as to the amount of allowable hours and acceptable categories/topics in your particular state.

Multiple Choice Questions

1. What is the estimated number of emerging presbyopic patients every year?
 - a. 4-5 million
 - b. 10 million
 - c. 20 million
 - d. 30 million
2. Which of the following prescriptions would be the LEAST likely to do well with current spherical multifocal contact lenses?
 - a. A patient with no astigmatic correction
 - b. A patient with .25 D of astigmatism
 - c. A patient with .50 D of astigmatism
 - d. A patient with 1.50 D of astigmatism
3. The deliberate alteration of a prescription in the non-dominant eye for the purpose of enhancing a patient's reading vision is commonly called _____.
 - a. Binocular vision
 - b. Monocular vision
 - c. Monovision
 - d. There is no such thing
4. Which of the following are options for presbyopic patients with astigmatism?
 - a. Eye glasses
 - b. Monovision contact lenses
 - c. Multifocal contact lenses
 - d. All of the above
5. According to the article, what is the estimated number of patients who are both astigmatic and presbyopic?
 - a. 20 million
 - b. 33 million
 - c. 75 million

- d. 100 million
- 6. The “D” lens in the Proclear Toric Multifocal should be placed on which one of the patient’s eye’s?
 - a. Right
 - b. Left
 - c. Dominant
 - d. Non-dominant
- 7. If a patient desires monovision, which of the following are viable refractive options?
 - a. Eyeglasses
 - b. Contact Lenses
 - c. Refractive surgery
 - d. All of the above
- 8. According to the article, what is the most important patient criteria for success with multifocal toric contact lens fitting?
 - a. Patient motivation
 - b. The amount of corneal astigmatism
 - c. The amount of lenticular astigmatism
 - d. The patient’s distance prescription
- 9. According the article, which of the following patients is the LEAST likely to be successful with a multifocal toric contact lens?
 - a. A patient with low degree of astigmatism
 - b. A highly demanding vision with critical visual needs
 - c. A patient with a high degree of motivation
 - d. A patient who is willing to use glasses to supplement the contact lenses for certain situations.
- 10. According to the article, what is the number one reason for the failure to offer multifocal toric lenses to patients?
 - a. Patient reluctance
 - b. Cost
 - c. Lack of confidence by the fitting doctor
 - d. Not enough chair time
- 11. According to the article, what is the minimum pupil size a patient must have in order for toric multifocal contact lens designs to be successful?
 - a. 2.0 mm
 - b. 3.0 mm
 - c. 4.0 mm
 - d. 5.0 mm
- 12. Which one of the following may affect the success of toric multifocal fitting?
 - a. Dry Eyes
 - b. Cataracts
 - c. Macular Degeneration
 - d. All of the above
- 13. Which of the following techniques is commonly utilized for stabilizing soft toric contact lenses?
 - a. Truncation
 - b. Slab off prism
 - c. Thin zones

- d. Decentered optic zone
14. Which of the following is an advantage of the omafilcon material from which the Proclear Toric Multifocals are made?
- a. It is helpful for patients with complaints relating to dryness
 - b. It causes regression of corneal neovascularization
 - c. It increased peripheral vision in the contact lenses
 - d. It enhances the reading power of the lens
15. Which stabilization process involves thinning the upper and lower portions of the contact lens?
- a. Periballasting
 - b. Thin Zone
 - c. Truncation
 - d. Slab-off prism
16. According to the article, how long should you allow the lens to settle when dispensing the first pair of toric multifocals to a patient?
- a. 10-15 minutes
 - b. 45-60 minutes
 - c. 2-3 hours
 - d. 24 hours
17. The direction of prism in most soft toric contact lenses is
- a. Base Up
 - b. Base Out
 - c. Base Down
 - d. Base In
18. Which of the following would be appropriate lighting condition in the exam room when evaluating the multifocal fit?
- a. No light at all. It should be totally dark
 - b. Light on full brightness
 - c. Lighting enough to simulate normal patient operating conditions
 - d. The lighting in the room does not make a difference.
19. What is the recommended replacement schedule for the B&L Toric Multifocal lens?
- a. Daily
 - b. Monthly
 - c. Quarterly
 - d. Yearly
20. What is the stabilization method used for the Proclear Toric Multifocal lens?
- a. Back surface prism ballast
 - b. Front surface prism ballast
 - c. Truncation
 - d. Dual Thin Zone