



MULTIFOCAL LENS IMPLANTS – WHAT YOU SHOULD EXPECT

Multifocal lens implants are an expensive but exciting technology. They are designed to reduce your dependence upon glasses as compared to if you had a standard “single focus” lens implant. When you are not wearing glasses, a standard lens implant will provide your eye with optimum focus set at one particular distance that does not change. You would then wear glasses in order to change this focus (e.g., moving the focus farther away or closer up).

How does the multifocal work?

With bifocal eyeglasses, you look through the top part of the lens for distance, and through the bottom area of the lens for near. The multifocal lens implant is entirely different because the specially engineered optic provides both a distance focus, and a near focus at all times. Your brain will learn to automatically select the focus that is appropriate for the task at hand. An analogy might be having background music playing in the room during a conversation. Your brain might “tune out” one to listen to the other. There is a brief learning curve for using this unique optical system. For example, you will need to learn the optimal distance to hold reading material - the so-called “sweet spot”. For this reason many patients report that their ability to function without glasses continues to improve gradually during the first year.

Will this expensive technology eliminate the need for glasses?

Unfortunately, multifocal lens implants usually do not entirely eliminate eyeglasses. There may always be situations where the print or the images are simply too small or too far away to see without glasses. The print quality and the amount of available light will make a difference. In addition, your retina must be completely healthy to achieve the optimum results.

Remember that how often an individual requires glasses varies across a broad range of percentages. At one extreme is always (people who must wear their glasses constantly = 100%); at the other end of the continuum is never (some young individuals with perfect vision and a naturally focusing lens never need glasses = 0%). Most of us are somewhere along this continuum in between the two extremes. It is impossible to know in advance how often you will “need” glasses after your multifocal lens implants. This depends upon variables such as your retina, any remaining astigmatism, and how visually demanding your everyday activities are. However, when compared to the standard single-focus lens implant, the multifocal should put you much closer to the desirable end of the spectrum discussed above. This is because the multifocal lens provides you with focus at more than one distance (“multifocal” means more than one single focal point).

Multifocal lens implants do offer the **convenience** of less dependence on reading glasses compared to standard lens implants. People who naturally see well in the distance often go without eyeglasses when outdoors or around the house. However, when they need to see something up close – even for just a moment - they often have to put on reading glasses. Examples of common momentary near tasks would be a looking at a cell phone, a photo, a menu, a boarding pass, an envelope address, a handwritten note, or a price tag or receipt. Having to frequently take their reading glasses on and off is inconvenient for many people. Because of this, they might wear their reading glasses around their neck, scatter multiple pairs



around the house, or simply wear bifocals all the time. Although they might still prefer eyeglasses for prolonged reading, most people with multifocal lens implants can enjoy the convenience of performing these simple near tasks without putting on reading glasses.

Will I see halos?

Depending upon the size of your pupils you may see halos, which appear as a glow around lights at night. These halos are different from, and much less problematic than those caused by cataracts. They relate to viewing distant lights through both the near and far focusing zones of the lens. They do not obscure the vision, but rather can create a distracting ghost image. Fortunately, these halos become less noticeable and distracting over time as the brain learns to selectively ignore them through a process called neuroadaptation. This is the same process that allows us to ignore background noise, such as traffic sounds or an air conditioning fan. Another analogy would be the temporary distraction of wearing earrings, jewelry, or a seatbelt for the first time. As these sensations become more familiar over time, we become less aware of them. How quickly this adjustment occurs varies for different individuals. However, experience has shown that neuroadaptation is a gradual process and that suppression of the nighttime ghost images continues to improve throughout the course of the first year.

Even a standard lens implant can produce some halos at night, but they are more evident with a multifocal lens implant. This is because the pupil dilates in the dark allowing more light to enter the interior of the eyeball and to scatter off of the peripheral parts of the lens implant. Halos are always very noticeable during the first 24 hours after surgery when your pupil is still dilated. Do not be alarmed by this temporary artificial situation. The first generation multifocal lens implant that was introduced in the late 1990's produced very prominent halos that were difficult for many patients to adapt to. The newest multifocal lenses have been successfully re-engineered so as to significantly reduce the halo effect compared to the earlier model.

Can the multifocal lens be implanted in just one eye?

Yes, this is possible when the other eye already has a standard implant, or when there is no cataract in the opposite eye. However, the ability to see both far and near without glasses is better when you have a multifocal lens in both eyes. With a multifocal lens implant in one eye, the brain simply integrates all of the vision that you get with both eyes open. For this reason, you shouldn't constantly compare one eye to the other. Some individuals may take longer than others to adapt to this situation. With a multifocal lens in one eye, you should still have more ability to see things close up, as compared to if you had received a standard single-focus lens implant.

Can the multifocal lens be removed if I don't like it?

This is always possible but entails the risks of additional surgery. However, there may be a rare individual for whom the halos continue to be unacceptable, and who then elects to have the multifocal replaced with a standard lens implant. One should not rush into this decision because the ghost images nearly always improve over time. However, removal of any lens implant generally becomes more difficult after 4 months.

Does insurance cover the premium cost to upgrade to a multifocal?

Unfortunately it will not. Health insurance – whether a PPO, HMO, or Medicare – covers a cataract operation with a standard lens implant when the cataract is bad enough to be considered “medically necessary”. The additional fee to upgrade the lens implant to a multifocal is not covered, because the added convenience of reducing your dependence on eyeglasses is not considered “medically necessary”.



We ask that you pay this premium out-of-pocket fee in advance, because we will be ordering the multifocal lens implant in your specific power for you.

Can patients without cataracts have multifocal lens implants?

Many people are interested in surgical methods to reduce their dependence upon eyeglasses and contact lenses. Laser eye surgery, such as LASIK, is the most common way to correct nearsightedness if one is under the age of 40. However, for patients over the age of 50, laser surgery by itself is less advantageous. By this time of life, any method that corrects your distance vision (including contact lenses, LASIK, or a standard lens implant) will not work for reading up close without glasses. Another problem with laser eye surgery, such as LASIK, is that it complicates any lens implant surgery that is done later on for a cataract. Unfortunately, determination of the correct lens implant power is very unpredictable in eyes that have had prior LASIK.

The multifocal lens implant is the only technology that can allow a 50+ year-old eye to have focus both far and near without glasses. For this reason, people over the age of 50 wearing strong prescription glasses may elect to have multifocal lens implants in order to see much better without glasses. However, with no cataract present, health insurance covers none of the costs. Because the natural lens must still be removed before implanting a multifocal lens, the procedure is performed in the same way as for cataract surgery. Thus, patients electing to have lens implant surgery to reduce their need for glasses will never have to worry about developing cataracts later on in life.

Who might need a LASIK “enhancement” after a multifocal lens implant?

Like contact lenses or eyeglasses, every artificial lens implant model (both standard and multifocal) is manufactured in more than 60 different “powers”. As with prescription eyeglasses or contact lenses, it is important to match the appropriate artificial lens implant power to your eye. To prescribe the correct spectacle or contact lens power, we utilize trial and error to preview various lens powers in front of your eye. When you are asked, “which is better, one or two?” you are selecting the lens power that you see best with. However, because the artificial lens implant is inserted inside the eye, and only after your natural lens (cataract) has been removed, it is impossible for you to preview or “try out” different powers before surgery. We obviously cannot insert more than one lens implants and then let you select which one gives you the best distance focus. Finally, once it is implanted, we cannot easily exchange the lens implant the way we could with contact lenses or eyeglasses.

Fortunately, the appropriate power of the lens implant can be estimated using mathematical formulas that utilize preoperative measurements of your eye’s dimensions. Although the measurements are very accurate, there are individual variables that prevent this process from being 100% perfect. One variable is the final precise position where the implant will end up inside your eye. Astigmatism is a naturally occurring imperfection in the optical shape of your cornea. Astigmatism is therefore not corrected by the lens implant placed inside the eye and is another variable that may reduce your ability to see *without* glasses. The entire process is accurate enough so that most patients will see quite well without glasses in the distance (assuming that was the target). However, it won’t be “perfect” and you might choose to wear glasses with a mild prescription for those times when a sharper distance focus is required.

For a multifocal lens implant to work well, it is very important for the selected lens power to match your individual eye. Despite flawless surgery, some patients with multifocal lens implants are still not able to see as well without glasses as they would like. If this is due to the lens power being “off”, what can be done?



One option is to wear glasses or contact lenses. A theoretical solution might be to exchange the multifocal lens implant for another with a different power. However, because of the risks involved with removing a lens implant, it is usually safer to “enhance” or fine-tune any residual prescription with an external LASIK procedure on the cornea instead. LASIK can also correct any remaining astigmatism coming from your cornea.

Every type of eye procedure intending to reduce a person’s need for eyeglasses may need to be “enhanced” with additional surgery. For example, nearsighted people choosing to have laser eye surgery (e.g. LASIK) may need a second treatment if the first one does not fully correct their prescription. This unpredictability is understandable because we are not machining plastic or metal, but are working instead with human tissue.

Likewise, it is possible that either the standard or multifocal lens implant that has been selected may not adequately correct your distance prescription. Depending upon how far off we are, laser enhancement can be a good option. The odds that this would need to be done with a multifocal lens are usually less than 10%. The chances are greater in patients with high astigmatism or requiring very strong prescription glasses to begin with. The need will also depend upon how much better one wants to see without glasses. You should know about this possibility in advance before making your decision to have a multifocal lens implant.

What do you recommend I do?

Like cosmetic surgery, taking extra steps to reduce spectacle dependence is a discretionary and personal decision. Because this does not involve health advice or medical needs, the ultimate decision is yours. Start by evaluating how strong your desire is to see as much as possible without glasses. Every individual will value such convenience quite differently. My role, as your ophthalmologist, is to explain your options to you.

Summary

If you are a patient with cataracts, you are considering surgery because your cataracts prevent you from seeing well with your corrective eyeglasses. After cataract surgery you should be able to see well for both far and near distances with your new eyeglasses (assuming no other eye health problems). The decision about which type of artificial lens implant to have will only affect your ability to see without eyeglasses following cataract surgery. With both standard and multifocal lens implants, most people will see reasonably well in the distance without any eyeglasses. However, multifocal lens implants will provide the added convenience of being able to read many things without glasses.

No current technology can eliminate glasses, and how well you will perform with multifocal lens implants can vary because of individual factors. Nevertheless, they are an excellent option for patients who already need cataract surgery who want to decrease their reliance upon glasses. While multifocal implants carry no guarantees, they should greatly improve the odds that you will be able to read and see better overall without glasses.

(This handout is modified from an original authored by Dr. David Chang.)