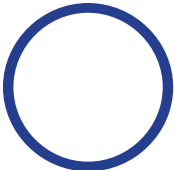


# Advances in cataract surgery

A new option for patients

BY ELIZABETH A. DAVIS, MD, FACS

 On July 15, 2016, Abbott Medical Optics announced that the U.S. Food and Drug Administration (FDA) approved the use of Tecnis Symfony Intraocular Lenses during surgery for cataracts. Minnesota Eye Consultants was the first in the Minneapolis–St. Paul market to offer this new lens to patients.

The first in a new category of intraocular lenses (IOLs), the Tecnis Symfony lenses are the only lenses in the U.S. that provide an extended depth of focus of continuous high-quality vision following cataract surgery, while also mitigating the effects of presbyopia by helping people focus on near objects. The FDA approval includes a version of the lens for people with astigmatism, the Tecnis Symfony Toric IOL.

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## Cataracts

Cataracts are a common condition, with almost 4 million cataract surgeries performed each year, and that number is expected to increase (2016 Comprehensive Report on the Global IOL Market). By age 80, more than half of all Americans either have a cataract or have had cataract surgery. However, cataracts do not just impact seniors. In 2016, it was estimated

that nearly one in four cataract surgeries were performed on people younger than 65. Many people who have cataracts experience other problems with their vision, such as presbyopia and astigmatism, which the Symfony lenses also address. Presbyopia, which affects most people over age 40, means people have lost the ability to focus on objects up close and often require glasses to perform near visual tasks. Astigmatism is when the cornea is misshapen, which causes blurry or distorted vision.

Cataracts often develop slowly, causing a decline in visual acuity and visual quality. Occasionally they develop rapidly. Regular visits to the eye doctor are important for catching changes in vision, but primary physicians can also watch out for several symptoms, such as:

- Cloudy vision
- Halos around lights
- Light sensitivity
- Difficulty seeing at night
- Double vision in one eye
- Poor night vision
- Seeing faded colors
- Frequent changes in glasses or contact lens prescriptions

When cataracts are in their early stages, they may be managed with an updated prescription to glasses or contact lenses. But as they develop, loss of vision may start to interfere with everyday activities like reading or driving.

## Candidates for the lens

An eye doctor will help determine candidacy for cataract surgery. They will assess current eye health and review medical history to determine whether there are other contributory factors.

During cataract surgery, the natural lens of the eye is removed, and an artificial lens, called an intraocular lens, or IOL, is inserted. The IOL most commonly used in cataract surgery is a monofocal lens, which only allows the person to see at one focal point without glasses, with objects at other distances being out of focus. In contrast, the Symfony lens was specifically developed with features to improve both the range and quality



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of vision. The lens has a diffractive echelette design that results in an extended depth of focus. Rather than having two distinct focal points (as occurs with multifocal IOLs), there is a range of clear vision from distance to closer focal points. The lens is also made of a proprietary material that reduces something called chromatic aberration (the dispersion of light of different wavelengths) and this enhances the quality of vision and contrast sensitivity.

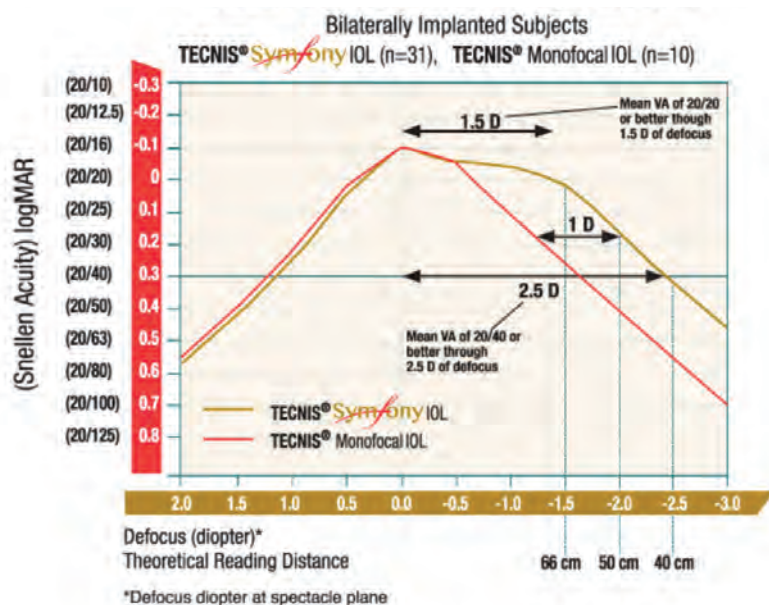
This new lens is ideal for patients who desire enhanced uncorrected visual acuity and it doesn't affect the way that cataract surgery is performed. The lens is inserted exactly the same way as any other IOL is inserted. Instead, it only changes the way that light is focused. With the Symphony, there is a greater range of vision in focus without glasses or contact lenses (see Table 1).

Other IOL solutions for treating presbyopia include multifocal IOLs that split light into two distinct foci, and accommodative IOLs that change the eye's overall power when the ciliary muscle contracts. The cataract surgeon will determine which IOLs the patient is a candidate for.

### About the new lens

It is important to note that the Symphony lens is not a multifocal IOL but an EDOF (extended depth of focus IOL), thus there is a continuum of vision from the distance to the proximal focal point (see Figure 1).

### DEFOCUS CURVE: 3-MONTH ADJUSTED DATA



#### CLINICALLY SIGNIFICANT INCREASE IN RANGE OF VISION

TECNIS<sup>®</sup> Symphony IOL Showed:<sup>3</sup>

- 20/20 or better mean visual acuity from distance to 1.5 D of defocus
- 20/40 or better mean visual acuity from distance to 2.5 D of defocus
- 1.0 D increase in depth of focus throughout the defocus curve

**Table 1.** Defocus curve that shows the greater depth of focus of the Symphony IOL compared to a monofocal IOL. The FDA clinical trial results showed that patients who received the Symphony IOL, on average, maintained 20/20 acuity through 1.5 D of defocus and 20/40 acuity through 2.5 D of defocus.

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## REQUEST FOR NOMINATION

### 2017 HEALTH CARE ARCHITECTURE & DESIGN **HONOR ROLL**

### Seeking Exceptionally Designed Health Facilities in Minnesota

Minnesota Physician announces our annual Health Care Architecture & Design Honor Roll. We are seeking nominations of exceptionally designed health care facilities in Minnesota. The nominees selected for the honor roll will be featured in the June 2017 edition of Minnesota Physician, the region's most widely read medical publication. Eligible facilities include any construction designed for patient care: hospitals, individual physician offices, clinics, outpatient centers, etc. Interiors, exteriors, expansions, renovations and new structures are all eligible.

In order to qualify for the nomination, the facility must have been designed, built or renovated since January 1, 2016. It also must be located within Minnesota (or near the state border within Wisconsin, North Dakota, South Dakota or Iowa). Color photographs are required at 300 dpi resolution (no more than eight) with caption of each to amarlow@mppub.com. If you would like to nominate a facility, please fill out the form below and, a brief project description (150-250 words) by Friday May 5, 2017.

For more information, call (612) 728-8600.

Publication Date: June 2017

Nomination Closing: Friday May 5, 2017

To submit online: <https://www.surveymonkey.com/r/2017HonorRoll>

### Honor Roll Nomination Form

Facility name \_\_\_\_\_

Type of facility \_\_\_\_\_

Location \_\_\_\_\_

Ownership organization \_\_\_\_\_

Owner address, phone \_\_\_\_\_

Architect/interior design firm \_\_\_\_\_

Architect address, phone \_\_\_\_\_

Engineer \_\_\_\_\_

Contractor \_\_\_\_\_

Completion date \_\_\_\_\_

Total cost \_\_\_\_\_

Square feet \_\_\_\_\_

Brief description \_\_\_\_\_

\_\_\_\_\_

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- Near focal point may not be as close as certain multifocal lenses, so some reading glasses may be required for small print.
- Low incidence glare and halos. Patients may have some scattered light rays at night, but not as significant as other multifocal lenses.
- Diffractive technology.
- The lens is made of an acrylic material, is foldable, and fits through a small incision.

- High-quality vision due to aspheric technology and low chromatic aberration.

The lens is approved in more than 50 countries around the world, and has been widely studied, with data from numerous clinical studies involving over 2,000 eyes. In clinical studies, the lens:

- Provided seamless, day-to-night vision. Patients could see objects sharply and clearly at a proximal focal point and far away distances, as well as points in between.

**MONOFOCAL IOLs**

Monofocal IOLs are used to restore vision in one area of focus—usually distance. Glasses may still be needed for near and intermediate distance activities.



**EXTENDED DEPTH OF FOCUS IOL**

An Extended Depth of Focus IOL provides a continuous range of high-quality vision—from near to far and points in between—and may reduce the frequency of wearing glasses.



**Figure 1.**

Monofocal IOLs typically require glasses for most distances whereas extended depth of focus IOLs can reduce dependence on glasses for certain distances.

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- Provided high-quality vision. Some IOLs may leave patients with an inability to focus clearly due to competing wavelengths of light passing through the lens at different angles (known as chromatic aberration), or with vision that is not completely focused because of the shape of the cornea (known as spherical aberration). The Symphony lens has been engineered to mitigate these issues.
- Demonstrated a low incidence of halo and glare, which may be perceived as rings or blurring around bright lights. Glare and halo can sometimes affect an individual's ability to drive at night or to perform other visual tasks.

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Almost 4 million cataract surgeries [are] performed each year.


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house, and he enjoys sports. Prior to the surgeries on both of his eyes, all of these activities were affected by his vision. He was the perfect candidate to receive the Symphony lens.

Gary notes that the new lens has improved his quality of life quite a bit. He can read the newspaper without reading glasses, view trees 100 yards from his house, and see the sun glistening on each leaf. He is amazed at the detail he can see now. After cataract surgery he didn't want to wear glasses, and now he doesn't have to. He has clear vision near and far, and doesn't rely on glasses at all now.

Many of the IOL options we have for treating cataracts are excellent, and result in high patient satisfaction, but each have their own distinct advantages and disadvantages. A good surgeon

will help each patient choose the IOL that is best suited for their desires, lifestyle, preferences, and unique eye anatomy.

**Elizabeth A. Davis, MD, FACS**, is a partner at Minnesota Eye Consultants, and served as an advisor with Abbott on the Symphony lens. 

### Case study

Patient Gary Way, 67, from Grand Rapids, Minn., recently had cataract surgery with me, and he selected the Symphony lens after we discussed all of the options. Gary had the Symphony lens put in both eyes. One of the most important things for him was his inability to read street signs or highway signs. That made things very difficult. He is retired, but does a bit of woodworking and other things around the

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