Newsletter
Are You AWARE?
VisionAWARE.org Self-Help for Vision Loss

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Special Issue on Cataract Surgery - Part 2 of 2

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IN THIS ISSUE....

A Message From Our President, Anne Yeadon

Anne Yeadon, President

Greetings VisionAWARE readers and welcome to our Special Issue on Cataracts. We are delighted to welcome Tina D. Turner, M.D. as the contributing author of this issue. Dr. Turner received a BA in chemistry from the University of Tennessee and her MD from Baylor College of Medicine in Houston. She completed her ophthalmology residency at the University of Michigan's Kellogg Eye Center and is currently a staff comprehensive ophthalmologist at Henry Ford Health System's Grosse Pointe Ophthalmology.

In fact, we are so pleased with Dr. Turner's contributions that we are publishing this Special Issue newsletter in two installments:

- In the first installment, Dr. Turner explained what cataracts are, how they

form, the symptoms of cataracts, and how they are diagnosed.

- In this second installment, Dr. Tuner provides an in-depth discussion of artificial lenses, preparation for cataract surgery, the surgery itself, and the post-surgery recovery process.

We hope you enjoy our Special Issue on Cataracts and find the information useful. If, after reading the newsletter, you would like to share your experiences with us, or if you have additional questions, please don't hesitate to contact us. And don't forget to share this newsletter with those who want to learn more about cataracts and cataract surgery. Again, many thanks to Dr. Turner for sharing her wealth of experience and expertise.

All good wishes, Anne Yeadon, President, AWARE anne.yeadon@visionaware.org

An Introduction to Cataract Surgery by Dr. Tina D. Turner

Tina D. Turner, M. D. Ophthalmologis

Dr. Tina D. Turner received a B.A. in chemistry from the University of Tennessee and her M.D. from Baylor College of Medicine in Houston. She completed her ophthalmology residency at the University of Michigan's Kellogg Eye Center. She is currently a staff comprehensive ophthalmologist at Henry Ford Health System's Grosse Pointe Ophthalmology.

When Should an Individual Have Cataract Surgery?

Dr. Turner:

"To date, no medication or eye drop has been proven to prevent or reverse cataract formation. If a cataract is causing nearsightedness or a change in an individual's prescription, new prescription

eyeglasses can help improve blurred vision. The only treatment for a cataract is surgical removal of the natural lens.

A cataract should not be removed simply because it is present. Many people have cataracts that do not cause blurred vision, interfere with activities of daily living, or otherwise prevent them from leading active and productive lives. In such cases, these individuals should not undergo unnecessary surgery to remove their cataracts.

However, if an individual has blurred vision that makes it difficult to read print or read signs while driving; has disabling glare while driving at night; or has difficulty engaging in hobbies such as knitting, crocheting, or doing crossword puzzles, it is time to consider cataract surgery. In short, if an individual has a cataract and resultant blurred vision that makes it difficult to do anything he or she wants and needs to do, it is time to consider cataract surgery.

If there are cataracts in both eyes that require surgery, the surgeries are usually performed several weeks apart. Cataract

surgery on both eyes at the same time is not recommended because there is a possibility of complications affecting both eyes at the same time, the most worrisome being infection.

A cataract does not have to become "ripe" before it can be removed. In the past, the lens could not be extracted safely from the eye unless it was at a relatively advanced stage of development. With modern advances in cataract surgery, the lens can now be removed from the eye at any stage of development.

It is true that the longer a cataract develops, the more it hardens. The firmer or more developed a cataract is, the more difficult it can be to remove. In certain situations, it is safer to remove a cataract sooner rather than later; in most cases, however, an individual should not undergo cataract surgery unless he or she is experiencing blurred vision caused by the cataract.

It is also true that if cataracts are allowed to develop for long periods of time, they can

cause inflammation or increased intraocular (within the eye) pressure that can lead to glaucoma. In these situations, it is extremely important to remove the cataract to prevent loss of vision from the resultant inflammation or glaucoma. This scenario rarely occurs in the United States, however, due to regular access to most types of health care.

It's important to understand that it is the patient who should – and must – make the decision to undergo cataract surgery. It is the doctor's responsibility to educate patients and give them the knowledge they need to make an independent and well-informed decision regarding cataract treatment."

What Are the Risks of Cataract Surgery?

Dr. Turner:

"All surgery entails risk. Fortunately, with favorable outcomes at approximately 98%, cataract surgery is highly successful. There is still potential for serious complications, however, some of which can result in pain, permanent loss of vision, or even loss of the eye.

These complications can include infection, retinal detachment, inflammation inside the eye, swelling in certain parts of the eye, retention of a piece of the cataract inside the eye, glaucoma, hemorrhage, possible worsening of certain eye conditions (such as diabetic retinopathy), and failure to improve vision if other eye diseases are present (such as macular degeneration). Sometimes, these complications may require further treatment or surgery in an attempt to repair them.

Endophthalmitis is a serious infection inside the eye that can develop after cataract

surgery. Although many precautions are taken to prevent complications after cataract surgery, infection can still develop. The chance of developing infection after cataract surgery in the United States is approximately 0.1%.

Endophthalmitis after cataract surgery is usually the result of a bacterial infection. The most common bacteria found to be the culprits in this type of infection are the "staph" (staphylococcus) and "strep" (streptococcal) bacteria, which normally live on human skin. Endophthalmitis usually develops in the first week after cataract surgery and causes a range of symptoms, including pain, redness, decreasing vision, eyelid redness or swelling, or a yellow/green discharge from the eye.

Should any of these symptoms develop after cataract surgery, it is extremely important to seek medical care immediately. The sooner endophthalmitis is treated, the better the prognosis for the eye and vision. Endophthalmitis is treated either with antibiotics injected into the eye or with

surgery plus antibiotics injected into the eye. Even with treatment, the vision and the eye can be permanently damaged.

Retinal detachment occurs when the retina, the light-sensitive tissue that lines the inside surface of the eye, develops a hole or tear and subsequently detaches, or falls away, from the wall of the eye. Once separated from the wall of the eye, the retina loses part of its blood supply, and without a blood supply, the cells in the retina begin to die. Once lost, retinal cells do not regenerate. It is the retina that is responsible for processing visual information and sending it to the brain. Thus, once the retina is damaged, it results in permanent loss of vision. The chance of developing a retinal detachment after cataract surgery is approximately 1 in 3000. If diagnosed early, a retinal tear can be treated with thermal laser photocoagulation. Retinal detachment usually requires surgical intervention.

It is important that you fully understand the risks, benefits, and alternatives to cataract surgery, and that you ask any questions and

voice any concerns you may have. In order to make a well-informed decision to have surgery, it is extremely important that you fully understand these risks."

What Happens After the Decision Is Made to Have Cataract Surgery?

Dr. Turner:

"Once a patient decides to have cataract surgery, the patient and surgeon should discuss plans for the surgery, such as the anesthesia that will be used, the patient's expectation for his or her vision, and what the patient should expect during and after the surgery.

Commonly, cataract surgery is performed with topical anesthesia. This is accomplished by instilling a very strong numbing medication into the eye. It is usually accompanied by medication in the patient's arm intravenously to help him or her feel relaxed and comfortable. This is the least risky form of anesthesia, and most patients do extremely well with topical anesthesia and some intravenous sedation. Sometimes, medication is injected around the eye socket to numb the eye and paralyze eye and eyelid movement. These

injections carry their own risk, however, and are being used less frequently.

On occasion, general anesthesia may be needed. Since cataract surgery performed with topical anesthesia requires patient awareness and cooperation, general anesthesia is usually required for children, patients with developmental delays, and patients with dementia. During cataract surgery, patients must lay flat and still; therefore, patients with movement disorders, such as Parkinson's Disease or restless leg syndrome, may also require general anesthesia. Patients who have difficulty breathing while lying flat, or who have back or neck pain/disorders that prevent them from being comfortable when lying flat may also require general anesthesia for cataract surgery.

After deciding to have cataract surgery, the patient and physician should discuss the options for correcting his or her vision post-surgery. Artificial lenses, which are implanted in the eye during cataract surgery to replace the natural lens that is

being removed, can make vision clear once again and, in some cases (but not always), reduce the need for corrective eyeglasses after surgery.

The surgeon will take special eye measurements before surgery, including the length of the eye and the curvature of the cornea, to determine what power the artificial lens should be.

Cataract surgery can decrease an individual's dependency on eyeglasses and, in some cases, eliminate the need for eyeglasses after surgery. However, some patients will still need eyeglasses to fully correct their distance and/or reading vision to 20/20."

What Is an Artificial Lens?

Dr. Turner:

"Once the natural lens in the eye has been removed, the eye loses its ability to focus light and images clearly on to the retina, the light-sensitive membrane that lines the inside surface of the eye. Before the development of artificial lenses, hard contact lenses or very thick eyeglasses were the only options for correcting vision after cataract surgery.

Artificial Intraocular Lenses

Artificial intraocular (within the eye) lenses were developed in the early part of the 20th century, and Dr. Harold Ridley implanted the first artificial lens in 1949 in London. In 1952, the first artificial lens was implanted in the United States at Wills Eye Hospital in Philadelphia. Since that time, cataract surgery and artificial lenses have continued to evolve and develop. In most cases, the natural lens is removed and the artificial lens is implanted during the same surgery. The

artificial lens is usually placed within the lens capsule, which is the small "sac" or membrane that once enclosed the natural lens and held it in place.

Artificial lenses are made of inert (or non-reactive) plastics, such as PMMA, silicone, and acrylic. Just like natural lenses, artificial lenses have refractive power, or the ability to bend light, which helps to focus light rays and images on the retina. Because of this refractive power, it is now possible to correct nearsightedness and farsightedness with artificial lenses."

Monofocal Lenses

Artificial intraocular lens

- At present, monofocal lenses are the type most commonly implanted.
- Since "mono" means "one," monofocal lenses provide one type of focused, or clear, vision. They provide clear vision either at distance or near, but not both.
- Most patients who select monofocal

lenses choose to have good distance vision and use reading glasses to help with near visual tasks, such as reading, computer work, or sewing.

- Some patients, however, may choose to have better near vision und use eyeglasses that will help correct distance vision.
- Monofocal lenses are typically covered by insurance and Medicare, and usually require no additional out-of-pocket payment.

Astigmatic Lenses

- Astigmatic Lenses are monofocal lenses that can correct astigmatism. The degree of astigmatism present in the eye must be less than +3.00 diopters, however, for astigmatic lenses to be effective.
- Because astigmatic lenses can correct astigmatism, they may reduce the need for an astigmatism correction in the patient's eyeglasses.
- Astigmatic lenses are not fully covered

by insurance and Medicare, and usually require a substantial out-of-pocket patient contribution.

Dr. Turner:

"It is possible, however, to implant a monofocal lens in one eye for distance vision and a monofocal lens in the other eye for reading vision. This technique is called monovision and can provide clear vision at both distance and near after cataract surgery.

Monovision works very well for some patients, while other patients do not tolerate it very well at all. If a patient has used monovision contact lenses in the past, with one eye corrected for distance and the other for near, the same type of monovision can be created with cataract surgery.
If a patient has never experienced monovision, but is interested in learning more about it, it is recommended that he or she experiment with monovision eyeglasses or contact lenses prior to cataract surgery and determine if monovision is an appropriate solution."

Multifocal lenses

- Since "multi" means "more than one," multifocal lenses provide more than one type of focused, or clear, vision. They provide clear vision both at distance and near simultaneously.
- Because multifocal lenses correct both distance and reading vision, they can reduce the patient's dependence on eyeglasses and contact lenses.
- Multifocal lenses are not fully covered by insurance and Medicare, and usually require a substantial out-of-pocket patient contribution.

Dr. Turner:

"Multifocal lenses can present problems, however. As The American Academy of Ophthalmology notes, 'Pilots, night drivers or those who spend a lot of time in front of the computer may not be good candidates for multifocal lenses. Patients who are intolerant of a small amount of glare and/or halos around lights, especially at night, may not

be good candidates for these types of lenses.' Also, patients who have significant astigmatism or macular disease should not have multifocal lenses."

You can learn more about artificial lenses at the following resources:

- Multifocal Intraocular Lenses: Frequently Asked Questions from the UCLA Laser Refractive Center
- Monofocal vs. Multifocal Implants from ImproveYourVision.com

How Is Cataract Surgery Performed?

Dr. Turner:

"Two very small incisions (one large, approximately three millimeters, or one-tenth of an inch, and one small, approximately one millimeter, or one thirty-second of an inch) are made in the cornea, which is the transparent dome-shaped membrane that covers the front part of the eye. A thick, gluey, viscous material (Amvisc® or Viscoat®) is injected into the front part of the eye to help maintain its shape during surgery. This viscous material is made from substances that occur naturally in the body. Because it is thick, this material will not leak out of the incisions during surgery.

Phacoemulsification

The surgeon creates an opening in the natural "sac" or "bag" that holds the lens in place, called the lens capsule. The lens is separated from the lens capsule by using a

balanced salt solution. Once the capsule is open and the lens can move freely inside the capsule, a special ultrasound device is used to break the lens into small pieces and suck it out of the eye. This technique is called phacoemulsification. Prior to the development of phacoemulsification, the lens used to be removed in one solid piece through a very large incision (8–12 millimeters, or ¼–½ inch). That surgery entailed considerably more risk and had a significantly longer recovery time.

After the lens is removed, additional viscous material is injected into the lens capsule to hold it open and make room for the new artificial lens. The folded artificial lens is inserted into the "sac" or capsule, where it is then allowed to unfold. The viscous material that maintained the shape of the eye during surgery is removed. The two incisions usually self-seal and do not require stitches.

Phacoemulsification was introduced more than 40 years ago and is now the most common method used to remove cataracts. Lasers are not yet commonly

used to perform cataract surgery in the United States, but are currently being investigated in clinical trials in the United States to determine their effectiveness and advantages over phacoemulsification."

How Long is the Recovery Time After Cataract Surgery?

Dr. Turner:

"Some patients see very well the day after cataract surgery. Other patients see well a few days after surgery, and still others may need a full month to reach their maximum vision improvement.

During the first week after surgery, it generally is recommended that the patient keep the eye covered either with eyeglasses or the eye shield at all times to protect it from being bumped or rubbed. A small amount of pressure can easily open the incision, and protecting the eye prevents this. Also, it is recommended that the patient refrain from (a) bending with the head below the waist, (b) lifting over 10

pounds, and (c) straining (on the toilet, for example) to the point of holding one's breath. All these activities increase the pressure inside the eye and can open the incision.

Antibiotic and anti-inflammatory eye drops are used in the weeks after cataract surgery to help prevent infection and control inflammation. A few weeks after the surgery, the patient is checked for eyeglasses and given a final prescription.

Artificial lenses last for a lifetime, and with newer types of lenses, it is very rare to experience a lens-associated complication. Occasionally, an artificial lens can dislocate (move out of its intended position) and result in blurred vision. This usually occurs as a result of trauma to the eye and the doctor should be contacted immediately."

Can a Cataract Come Back?

Dr. Turner:

"Because a cataract is a clouding, or opacification, of the natural lens and cataract surgery entails removal of the natural lens, a cataract cannot come back after surgery. Fortunately, artificial lenses do not form cataracts.

Capsular Opacification

However, the lens capsule, which is the small "sac" or membrane that once enclosed the natural lens and held it in place, can become cloudy after surgery. This is called capsular opacification and it develops in approximately 25% of patients after cataract surgery. If this occurs, the patient may develop symptoms that are similar to those of a cataract (See What Are the Symptoms of a Cataract?), such as blurry or hazy vision, difficulty reading regular print, and sensitivity to bright lights and glare. Capsular opacification is treated

with laser to create an opening in the center of the opacified lens capsule that allows light to enter the eye. The procedure is painless, requires less than five minutes, and is usually performed in the doctor's office."

Online Resources for More Information About Cataracts and Cataract Surgery

- All About Vision - Cataract signs and symptoms, causes, and treatment, with illustrations of the functional visual effects of cataracts.
- DocShop.com - A cataract surgery guide, including information about symptoms, types, diagnosis, and treatment
- ImproveYourVision.com: The Cataract Center: What are cataracts, cataract prevention, multifocal IOL, phacoemulsification, monofocal vs. multifocal implants, insurance coverage
- The Macula Center - Also about cataracts, including causes, prevention, surgery, and illustrations of the functional visual effects of cataracts
- MayoClinic.com – Cataracts: An introduction, signs and symptoms, causes, risk factors, when to seek medical advice, treatment, self-care, and prevention

- Medline Plus - An interactive tutorial about cataracts
- National Eye Institute - Facts about cataracts: A definition, causes and risk factors, symptoms and detection, treatment, current research
- National Eye Institute Publications Catalog - A range of publications about cataracts, in English and Spanish
- National Institutes of Health: Senior Health - Cataracts: Definition, development and risk factors, symptoms and detection, treatment and prevention, frequently asked questions
- StLukesEye.com - Cataracts defined, with illustrations of the functional visual effects of cataracts. Includes information on cataract surgery, including selecting an implant and frequently asked questions
- Vision Channel - An overview of cataracts, including types, causes, signs and symptoms, and diagnosis
- West Texas Eye Associates - An

explanation of cataracts and cataract surgery, with illustrations of the functional visual effects of cataracts

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