

The eyes have it

Technology revolutionizes cataract surgery

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By HEATHER LARSON POYNER
hpoyner@kenoshanews.com



Dr. I. Paul Singh with the Bausch + Lomb VICTUS femtosecond laser platform used to perform cataract surgery on patients at St. Catherine's Hospital. The laser makes precise incisions. (Brian Passino)

Rapidly evolving technologies are changing the conversations people are having with their eye doctors. Particularly when it comes to the topic of cataracts.

“Ten years ago it was a very short discussion,” says local ophthalmologist Dr. I. Paul Singh. “The short answer was to have surgery that just removed the cataracts,” he said.

Today’s technology expands the conversation to include sophisticated corrective lenses implanted to replace the occluded ones, and laser-assisted surgical procedures that correct astigmatism at the time of cataract removal.

Cataracts are the clouding of the lens of the eye located behind the iris and the pupil. A clouded lens blocks light to the back of the eye, reducing the ability to see clearly. Although there are several types of cataracts, those associated with aging are called nuclear cataracts because they form in the nucleus, or central area of the lens.

Age-related changes to the eyes have many people reaching for bifocals and reading glasses, but when blurry vision persists, colors become less bright or night driving poses increasing challenges, it may be time to check for cataracts.

A diagnosis of cataracts occurs during an eye exam with an ophthalmologist, and their removal is the prescribed course of action.

Cataract surgery involves precise, multi-plane incisions into the eye to ensure a stitchless, self-sealing wound. Next, the capsule surrounding the intraocular lens is opened to gain access to the cataract. The cataract is then broken up, removed and the lens replaced.

Years ago, clouded lenses were only replaced by standard, clear lenses that did not correct vision or address astigmatism issues.

Today, patients can choose from lenses that actually move with the eye as it focuses or correct for near, middle or far distances. Patients may even choose to have different solutions for each eye.

One of the most significant innovations in corrective eye surgery has been the introduction of laser technology. At one time lasers were only used to remove post-operative cloudiness on new lenses. Today they are used to perform surgery once only done by a surgeon's skilled hand.

Lasers came onto the healthcare scene just as personal computers found their way into homes and offices. In fact, the first surgical laser, called the excimer laser, was originally used to make computer chips.

In 1999, the FDA approved the use of surgical lasers for Laser Assisted In Situ Keratomileusis, better known as LASIK. In the past few years, the same technology that has been used to correct vision is now being applied to cataract surgery.

Dr. Singh of Eye Centers of Racine and Kenosha, is on the cutting edge of this new frontier. Three years ago, inspired to obtain the latest technology for cataract surgery for patients in this area, he researched options and presented his findings to Kenosha's United Hospital System.

In 2013 the hospital group purchased VICTUS, a femtosecond laser platform, a product of Bausch + Lomb. The system consists of a surgical laser and computer mapping equipment known as optical coherence tomography. Imaging the eye, the OCT helps surgeons plan incisions executed by the laser.

The end result — cataract removal and lens replacement — is the same as that obtained from standard surgery, but is superior in some aspects, notes Singh. "Lasers are able to do certain crucial steps of surgery in a predictable way; they take away some of the variables."

For example, the laser is particularly good at opening the thin membrane or capsule in front of the intraocular lens for accurate lens positioning, Singh said.

Although new lenses are still manually placed on the eye, having a perfectly round opening increases the chances that the lens will sit correctly on the eye, Singh said.

Another plus to laser surgery is its decrease of total energy used, says Singh. With standard surgery, cataracts are broken up using ultrasonic devices that emit heat. Generating super-short optical pulses called "femtoseconds" the laser softens the cataract first and generates less heat. The results is lower inflammation of eye tissue and faster healing time as compared to standard surgery, Singh said.

Lasers are also superior to manual surgery in the ability to change the curvature of the eye to correct astigmatism, says Singh.

While laser-assisted cataract surgery brings technological advantages to the operating table, it comes at a higher price than standard surgery. Typically, health insurance will cover cataract removal and replacement with clear lenses. Corrective lenses and laser options are extra.

Acknowledging that the additional cost may be a deterrent for some patients, Singh points out that traditional surgery is an equally reliable option to address cataracts.

“It is my job as a doctor to educate patients so they can make an informed decision,” Singh said.

Since the VICTUS system was installed at St. Catherine’s in August 2013, Singh and colleague Dr. R. Krishna Sanka have treated 157 patients for cataracts with the system. St. Catherine’s is one of only a few medical centers in Wisconsin currently using the technology.

Cataracts in both eyes and a significant astigmatism led Racine eye patient Dennis Wiser to have laser-assisted surgery. Last November, Wiser, 64, had cataract surgery done on both eyes. “I was experiencing large halos around lights at night and my night vision had become noticeably worse,” he said.

He also had begun to notice that his contact lenses were no longer providing full correction.

Optimal vision is a priority for Wiser, a member of the Racine Common Council and the school board for Racine Unified, so last fall he investigated options for cataract surgery.

Wiser opted for the VICTUS procedure to address his deteriorating vision in an advanced way.

Singh performed “modified mono vision” on Wiser’s eyes. In his dominant eye Wiser got a movable lens for distance vision; his non-dominant eye got a lens that made him purposely near-sighted.

After a lifetime of glasses and contacts, Wiser is now appliance-free. “His vision was 20-20 the day after surgery,” Singh said.

“My reading vision has never been as good as it is now,” Wiser said.

“They come back saying they can do so many things they couldn’t do before (the surgery),” he said.

Singh sees technological developments as a shift in perspective for the eye care field. “What we have now is a paradigm change,” Singh said. “We’re not performing cataract surgery just to remove the disease, but to improve vision.”

As a physician, Singh is excited to offer options that have an immediate positive impact on his patients’ quality of life. “This is why the exam and consultation process has changed. Now I ask patients, ‘What do you want? What can I do to make you happy?’”

Cataract risk list

Age is the leading cause of cataracts. By age 65 nearly everyone will experience them to one degree or another, say eye experts. Other risk factors include:

- Trauma to the eyes
- Diabetes
- Hypertension
- Obesity

- Smoking
- Prolonged use of corticosteroid medications
- Statin medicines used to reduce cholesterol
- Previous eye surgery
- Hormone replacement therapy
- Significant alcohol consumption
- High myopia
- Family history

On the lookout for cataracts

What to watch for:

- Poor night vision
- Halos around lights at night
- Ghost images
- Faded colors
- Double vision
- Cloudy, blurry vision

Zapping those floaters

If you're seeing spots before your eyes, it might just be a case of the floaters. But floaters are nothing to sneeze at, contends Dr. I. Paul Singh, ophthalmologist for the Eye Centers of Racine and Kenosha.

Eye floaters — aka vitreous strands and opacities — are collagen fibers from the back of the eye that get clumped together, occasionally floating into one's field of vision.

For some, these "blobs" appear occasionally and seem to go away. For others they are more than just a nuisance. Some of Dr. Singh's patients have had floaters that nearly obscured their vision, making a challenge of daily tasks like using the computer and driving.

Because they are benign, many ophthalmologists recommend doing nothing about floaters. Singh, however, felt compelled to treat patients who came in with concerns. "I heard from artists and musicians who stopped doing things — the blobs were affecting their daily lives," he said.

In January 2013 Singh began using a Yag laser to disintegrate floaters. The procedure, called vitreolysis, consists of a five-minute zap of the laser. Since that time 155 patients have been treated for floater issues at the Eye Center's Racine office.

"It has an excellent risk-benefit ratio," reports Singh. "There is excellent impact on the quality of life and minimal risk."

Singh performs the procedure at St. Catherine's Hospital in Kenosha and in his offices in Racine.