Cataract removal

Continued advances

Up to now, the gradual clouding of vision caused by your cataracts really hasn’t affected you. But recently, your vision has worsened and you no longer feel safe driving. You wonder if it’s time to consider having your cataracts surgically removed.

Most adults can expect to experience some degree of gradual vision clouding as they age — and many experience significant vision loss. That’s why cataract removal is one of the most common surgical procedures. Fortunately, the most common type of cataract surgery is an outpatient procedure involving minimal anesthesia, tiny incisions, quick recovery and very high success rates.

Development

Sight begins when light passes through the rounded, outer surface (cornea) of your eye and through the black circle (pupil) in the middle of your eye. Next, light passes through your lens, which focuses the light that produces images on the membrane (retina) at the back of your eyeball.

The lens is where cataracts develop. A normal lens is crystal clear, but most people’s lenses begin to cloud with age. Clouding is the result of a normally clear arrangement of protein fibers in your lens that begin to break down and lose their trans-
Deciding which lens is best for you

The standard lens implant used in cataract surgery has a single focal length (monofocal), meaning the implant lens can’t adjust for both distant and close-up vision as can the natural lens. You and your surgeon typically have a discussion before the operation as to which type of lens is best for you. If a distance lens is implanted, you’ll need to wear glasses for reading. If a reading lens is implanted, you’ll need glasses for long-distance vision and night driving.

However, newer multifocal lens implants have recently been approved by the Food and Drug Administration that can provide good vision at more than one distance without the aid of eyeglasses. Studies have shown that most people who have multifocal lenses have improved vision at various distances, but with this versatility there may be a trade-off in vision quality. For example, your distance vision may improve with a multifocal lens, but not as much as it would have with a monofocal lens corrected for distance alone. In addition, some with multifocal lenses experience glare, halos around lights and loss of contrast.

Regarding small areas of one or both lenses begin to cloud at first, and you may not be aware of any vision change for some time. However, the clouding gradually spreads and becomes denser.

A cataract scatters the light that enters your eye and prevents a sharp, focused image from reaching your retina. The result may include:

- Increasingly blurred or dim vision
- Increasing difficulty with night vision
- Sensitivity to bright light and glare
- Seeing halos around lights
- Double vision in one eye

**Difficult to prevent**

Age is the single greatest risk factor for cataracts. By age 65, about half of all Americans have developed some degree of lens clouding, which may or may not impair vision. In many cases, cataract development can’t be avoided. However, you may be able to blunt the impact of additional risk factors by:

- **Stopping smoking and wearing sunglasses and a wide-brimmed hat** — Smoking and exposure to ultraviolet (UV) light lead to the production of unstable molecules called free radicals. These can damage cells of the lens. Choose sunglasses that block 99 to 100 percent of both ultraviolet A (UVA) and ultraviolet B (UVB) light. The materials used to make lenses of normal eyeglasses block anywhere from about 60 to 99 percent of the UV light, with high-index plastic and glass, and polycarbonate plastic providing the most UV protection.

- **Eating a healthy, plant-based diet** — A plant-based diet is naturally loaded with antioxidant vitamins, which can help neutralize free radicals. However, there’s no conclusive evidence that enhancing your vitamin intake with supplements helps prevent cataracts.

- **Taking care of health problems** — Following a treatment plan for certain medical conditions, such as diabetes, may help reduce your risk of eye problems. However, if your medical problem involves prolonged use of corticosteroids, realize that this may increase your risk of cataracts.

The only way to know if you have a cataract is to have an eye exam. Using a variety of tests, an eye doctor can identify lens clouding and determine how dense and visually significant it is. In addition, it’s important to test for other eye problems that can impair vision, such as diabetic retinopathy, glaucoma or macular degeneration.

If you’re diagnosed with cataracts, you and your eye surgeon can decide whether surgery is right for you. There’s often no rush. Cataracts develop slowly and, except for certain, uncommon circumstances, delaying surgery won’t cause damage to other parts of your eye.

In the early stages of the disease, using different eyeglasses, magnifying lenses or stronger lighting may work well enough for you to put off surgery. However, when cataracts begin to affect your quality of life, such as your ability to drive or read, it may be time to consider surgery.
Surgery options

Surgery to remove a clouded lens and replace it with an artificial lens is the only treatment for cataracts. Before performing surgery, your eye doctor uses ultrasound imaging to measure the shape of your eye. These measurements are used to determine the appropriate power for the lens implant.

Most people remain awake during cataract surgery, although sedation is typically used. Anesthetic eyedrops or injections are often all that’s used to numb the eye during surgery. The surgery is usually an outpatient procedure and is done on only one eye at a time. Altogether, you may spend several hours in the outpatient or hospital facility, but the surgery itself typically lasts less than an hour.

The most common method of cataract surgery is phacoemulsification (fak-o-e-mul-sih-fih-KA-shun). During this procedure, your surgeon makes a 1/8-inch incision in your cornea and inserts a needle-thin probe into your lens. The rapidly vibrating probe softens and breaks up the clouded lens using ultrasound energy. Contrary to popular belief, laser energy is never used in this process. The lens pieces are then removed by suction. Left behind is the clear, outer layer (capsule) of the lens, which helps support the implanted (intraocular) lens. The intraocular lens commonly used with phacoemulsification is flexible, similar to a soft contact lens. This is folded, inserted into the eye and then unfolded to full size. Most often, no stitches will be needed to close the tiny incision.

If your cataract has advanced beyond the point where phacoemulsification can effectively break up the clouded lens, a larger, 3/8- to 1/2-inch incision may be made if a rigid, nonfoldable intraocular lens is needed to replace your natural lens. The larger incisions require stitches and often involve a longer period for healing.

In and out

Complications after cataract surgery, such as infection, bleeding, inflammation and swelling, are relatively rare and most can be successfully treated. Within the first few days after surgery, any mild pain or discomfort should diminish and disappear while your vision steadily improves. Any changes for the worse — such as increased pain or vision changes or loss — require immediate evaluation by your eye doctor.

After your eye has had several weeks to heal, you’ll probably be fitted with prescription glasses or contacts to fine-tune your vision.

Thanks to advances, surgery to remove a cataract is very successful. In an otherwise healthy eye, cataract removal results in improved vision 95 percent of the time.

Health tips

Try these tips to make the best use of your medical checkup:

■ Prepare for your visit — Make a list of things you want to discuss, and think about how to describe your concerns. Organize materials you will need, such as your health record — including vaccinations, drug allergies and surgery information. Bring — in their bottles — your prescription drugs, as well as any herbal supplements, vitamins and nonprescription drugs you take. Bring contact information for any other doctors you have seen recently. Don’t forget a pen and paper to write down any new information.

■ On the day of your visit — Focus on the business at hand. Describe your most concerning or serious health issues first, speaking openly and honestly. Listen carefully, and ask questions if you don’t understand something. Take notes about your diagnosis, treatment plan and any information about new drugs that may be prescribed. Inquire about written patient education materials that you might take home. Find out how to follow up if you have questions later.

■ Follow through — After your visit, review your notes and any materials from your visit, and follow treatment or drug instructions carefully. If you experience worsening symptoms or medication problems, let your doctor know.
**News and our views**

**Study suggests vitamin D may play role in arterial disease**

Vitamin D plays a role in helping your body absorb calcium for bone health. But does vitamin D also play a role in the health of your arteries? Findings from a recent study suggest that may be the case.

The study, published in the June 2008 journal *Arteriosclerosis, Thrombosis, and Vascular Biology*, considered the association between vitamin D levels and peripheral artery disease (PAD), which occurs when blood flow to your legs or arms is restricted due to fatty deposits (plaques) that narrow and harden the arteries (atherosclerosis).

As part of a U.S. government health survey between 2001 and 2004, the 4,839 participants had their vitamin D blood levels assessed, and were screened for PAD affecting their legs. Researchers found that those with the lowest levels of vitamin D were more likely to have PAD than were those who had the highest levels of vitamin D.

Researchers caution that it’s too soon to suggest taking vitamin D supplements to prevent PAD. Mayo Clinic doctors agree that more research is warranted before vitamin D is considered protective for cardiovascular disease. The current daily recommended intake of vitamin D for adults 51 and older is 400 to 600 international units (IU). However, there’s ongoing debate over whether the amount should be higher. Many researchers suggest that a daily intake of 800 to 1,000 IU would benefit people more prone to vitamin D deficiency.

**Acupuncture and trigger point therapy for pain relief**

Acupuncture has been used in China for over 3,000 years to treat illness and pain. It involves inserting thin needles at specific body points. The needles may be stimulated electrically or by other means.

Myofascial trigger point therapy got its start in the early to mid-1900s in America. It involves injections, manual pressure, electrical stimulation and other techniques at certain “trigger points” to relieve muscle and connective tissue (musculoskeletal) pain.

What do these therapies have in common? A lot, it turns out.

A Mayo Clinic study, published in the May 10, 2008, issue of *The Journal of Alternative and Complementary Medicine*, found that common trigger point locations have over a 90 percent correspondence to the locations of classical acupuncture points. In addition, over 95 percent of these corresponding points are used for the same types of pain. The study suggests that acupuncture and myofascial trigger point therapy arose independently yet discovered a similar phenomena, each developing its own methods to produce pain relief.

If you’re considering either type of therapy for musculoskeletal pain relief, it’s good to know that both have remarkable clinical similarities. In choosing either, you’ll be tapping into a method of achieving pain relief that has spanned across millenniums and cultures. And that includes the modern era, as both acupuncture and myofascial trigger point therapy are generally considered safe and often effective complements to — or substitutes for — drug-based pain relief.

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**Vasculitis**

**Blood vessel inflammation takes many forms**

Until recently, you could count on one hand the number of headaches you’ve had in your 70 years. But in the past week, recurring and rather severe headaches have put you well past that number. Your doctor wants to have some blood work done and says a small tissue sample of a tender, thickened artery on your temple may be needed to make a final diagnosis. He suspects you’re dealing with a form of vasculitis.

The term “vasculitis” is generally used to describe blood vessel inflammation. Depending on the type of vasculitis, the result can be damage to blood vessel walls and the possible disruption of blood circulation to affected parts of the body, and in some cases, even death.

Fortunately, most types of vasculitis are treatable with early diagnosis and a closely monitored drug treatment plan.

**Inflamed blood vessels**

Vasculitis disorders fall under the umbrella of autoimmune diseases, where the body’s immune system mistakenly attacks healthy tissues. Very often, the exact cause of vasculitis is unknown, although some forms can be linked to infections — in particular hepatitis B and C — as well as certain medications.

Vasculitis disorders can affect people of all ages, although some types are more commonly seen in certain age groups. Although vasculitis isn’t strongly hereditary, genes may play a role in susceptibility to some forms of vasculitis.

Signs and symptoms vary depending on which vessels and organ systems are affected. Because vasculitis disorders are more widespread (systemic) in nature, they
tend to make you feel unwell. Some general signs and symptoms most people experience include fever, fatigue, weight loss, muscle and joint pain, appetite loss, and numbness or weakness. Diagnosis usually involves various blood tests, imaging studies of the blood vessels, and may include a biopsy of an affected blood vessel or tissue.

There are more than a dozen types of vasculitis, including:

- **Giant cell arteritis (GCA)** — This form of arteritis usually occurs in people older than 50, and it’s more frequent in women than in men. Notable signs include inflammation of arteries in the neck, upper body, arms and most often the head — especially in the temples. Headaches, scalp tenderness, jaw pain, blurred or double vision, and even blindness are all associated with giant cell arteritis.

- **Polyarteritis nodosa** — This rare disorder is usually seen in midlife and is somewhat more likely to affect men. Polyarteritis nodosa targets small- to medium-sized blood vessels in many different parts of the body, including the skin, heart, peripheral nerves, muscles and intestines, as well as the arteries of the kidneys. Skin rash, skin ulcers, muscle and joint pain, abdominal pain, and kidney problems are associated with this type of vasculitis. A variant of this disorder, microscopic polyangiitis, has features that may overlap with another type of vasculitis.

- **Necrotizing granulomatous vasculitis (Wegener’s granulomatosis)** — This disorder can occur at any age, but is more likely during midlife. It can cause inflammation of blood vessels in the nose, sinuses, throat, lungs and kidneys. As a result, you may experience shortness of breath, coughing, nasal stuffiness, chronic sinusitis, nosebleeds, frequent ear infections and hearing loss.

- **Henoch-Schönlein purpura** — This is more commonly seen in children, but it can affect adults and may be more severe when it does. Blood vessels of the skin, joints, intestines and kidneys may be involved. The consequences of this involvement may be abdominal pain, blood in the urine or stool, joint pain, kidney damage, and a rash especially on the buttocks, legs and feet. It may be triggered by infections.

Immune-suppressing drugs were first developed as chemotherapy drugs and to prevent transplant rejection. They’re often used in combination with corticosteroids to promote remission of vasculitis.

Thanks to combination drug treatments, necrotizing granulomatous vasculitis (Wegener’s granulomatosis) — once considered a fatal disease — can now be managed or even go into remission in a majority of those who have the disease.

Methotrexate may be used to treat some forms of vasculitis — notably necrotizing granulomatous vasculitis — and to treat less severe disease. It’s often used to maintain vasculitis that’s gone into remission and to reduce relapses after initial therapy with cyclophosphamide (Cytoxan).

Side effects with all of these drugs are a real concern. Careful balancing of their prescribed use and monitoring of responses to treatment by a skilled doctor — often a rheumatologist — is especially important to help minimize any side effects. Depending on the drugs taken, monitoring tests likely will be done at periodic intervals on an ongoing basis to monitor the disease and its treatment.

Once vasculitis is under control, be aware of the possibility for recurrence, which requires revisiting your doctor.
Dual energy X-ray imaging

Two is better than one

From the sidewalk you witness two cars colliding. Another witness stands at the opposite corner, getting a second perspective on the accident. So just how did this accident unfold?

If the police were to interview just one witness it might give them an accurate view of certain factors, but an incomplete version of others. Indeed, to get the most complete picture, they’d need to interview all involved parties, as well as gather evidence from the accident scene.

So it is with X-ray imaging and its well-known offshoot, computerized tomography (CT) scanning. A basic X-ray exam — such as a chest X-ray — gives you one perspective of the body’s internal structures. A CT scan gives multiple perspectives, allowing for a more detailed, 3-D view of internal organs.

But an emerging technology known as dual energy CT scanning is capable of going still one step further. It can identify the composition of substances and tissues in the body, and therefore can differentiate between things that would otherwise be difficult or impossible to tell apart on a standard CT scan.

The technology

The basic idea behind any X-ray device is that various body parts absorb different amounts of X-ray energy, depending on the energy of X-rays used and the characteristics of the tissue or substance.

But when a single level of energy is chosen to produce the X-rays — as is the case with ordinary X-rays (radiographs) and CT scans — some substances and tissues absorb a similar amount of X-rays and end up appearing identical or nearly so. However, it’s unlikely that any two substances or tissues will absorb both the same amount of high-energy X-rays and the same amount of low-energy X-rays.

Dual energy CT scanning takes advantage of this fact by using two levels of X-ray energy to produce the X-rays. After cross-referencing the high-energy reading with the low-energy reading, a much more precise tissue “signature” emerges, allowing for the differentiation of many substances inside the body.

That’s a great advantage, especially considering that dual energy CT scans subject you to no more, and in some cases less, radiation than would a traditional CT scan.

Being done today

Several applications have been developed in the handful of medical centers working with dual energy CT technology, including:

- Identifying kidney stone composition — Unlike a standard CT scan, a dual energy CT scan can tell whether a kidney stone is made of uric acid — which medications may be able to dissolve — or contains calcium. Calcium-containing stones may need to be surgically removed or broken up with shock waves.

- Detecting gout — Diagnosis of gout can involve several tests, including a standard X-ray and using a needle to obtain fluid from the affected joint for analysis. Sometimes, a clear diagnosis can’t be made. However, a dual energy CT scan can quickly identify the presence of gout or calcium-containing crystals. It also provides a 3-D view of where the gout is located in relation to the joint.

- Bone deletion — Imaging of blood vessels (angiography) involves injecting a contrast dye into veins. The dye causes blood vessels to appear bright white on CT scans. But bones appear just as prominently, and can obscure the view of vessels on 3-D images. In dual energy CT scans, bone can be distinguished from contrast dye and can be “deleted” from an image, leaving a clear view of blood vessels.

On the horizon

Additional applications in development include:

- Mapping blood flow within organs — Better visualization of a contrast dye in the bloodstream may allow for more sensitive analysis of whether an organ is receiving adequate blood flow.

- Visualizing clogged arteries — On a standard CT scan, a hardened area inside an artery obscures the view of the artery itself. On a dual energy CT image, it may be possible to delete the hardened area, enabling a clearer view of the artery.

Stay tuned

Although use of dual energy CT scans is limited at this time, you’ll likely hear more about it in coming years as this technology evolves.
Thyroid nodules

A lump in the neck

What can swallowing tell your doctor about the thyroid gland at the base of your neck? In your case, enough to turn your routine exam into a more extended experience.

The great majority of thyroid nodules are noncancerous (benign). Most don’t cause any symptoms and remain unchanged for years. But some may become large enough to make swallowing uncomfortable or even difficult — and a very small percentage turn out to be cancerous (malignant). Treatment depends on the type of thyroid nodule. An enlarged thyroid caused by one or more nodules is called a goiter.

Usually under the radar

Your thyroid manufactures hormones that help regulate metabolism — everything from how fast your body uses fats and carbohydrates to controlling your body temperature and even your heart rate.

Thyroid nodules are fairly common, and many don’t draw attention, especially if they don’t cause any symptoms. Certain factors appear to increase risk of thyroid nodules, including:

- Having a parent or sibling who was diagnosed with thyroid nodules
- Aging
- Being a woman
- Having had previous radiation therapy to the head or neck

Most nodules are colloid nodules, meaning they’re benign overgrowths of normal thyroid tissue. There may be just one or there may be many nodules (multinodular goiter) that may cause local pressure or pain. Some may grow larger, but they don’t spread beyond the thyroid gland itself.

The great majority of thyroid nodules are noncancerous (benign).

Sometimes, the lump is a thyroid cyst. Many are entirely filled with fluid and are usually benign. Others are complex cysts that have solid components and may be malignant. Some nodules are made up of thyroid cells that produce too much thyroxine, which is a hormone normally secreted by the thyroid gland. Too much thyroxine may cause sudden, unexplained weight loss, nervousness and a rapid or irregular heartbeat.

Chances are small that a nodule is cancerous. In general, cancerous nodules tend to grow quickly or feel hard. They may cause hoarseness, breathing or swallowing trouble, and enlarged lymph nodes under the jaw or in your neck.

Sorting out the problem

In addition to blood tests to check hormone levels, tests to evaluate thyroid nodules may include:

- Fine-needle aspiration (FNA) biopsy — This distinguishes between benign and malignant thyroid nodules. It’s a straightforward in-office procedure that uses a very fine needle to remove cells from a nodule.
- Ultrasound imaging — This is used to distinguish cysts from solid nodules, to determine if there are multiple nodules, and to help in guiding FNA biopsy.

- Thyroid scan — This involves injecting radioactive isotopes into your arm and then using a specialized camera to record how thyroid nodules respond. The scan can’t distinguish between benign and malignant nodules, but if a nodule is producing excess thyroid hormone it shows up on the scan as being “hot.”

Treatment decisions

Treatment options vary with the type of nodule. If an FNA biopsy determines that the nodule is benign, it usually warrants watchful waiting. Regular exams and periodic thyroid function tests can be used to monitor the nodule. If it increases in size, another biopsy is warranted. Nodules that remain suspicious or uncertain even after FNA biopsy typically are removed for examination to rule out cancer.

For malignant nodules, the usual treatment is surgery to remove the nodules and often a majority of thyroid tissue (near-total thyroidectomy). At Mayo Clinic, if the nodule is a low-risk cancer with certain papillary changes, radioactive iodine therapy generally isn’t given. If it’s a high-risk thyroid cancer such as follicular, Hurthle cell, or other types of papillary changes, then radioactive iodine therapy typically is given in addition to surgery. Long-term outcomes are generally excellent.

Large benign nodules, or goiters, that impair breathing, swallowing or cause hoarseness may also be removed surgically. The same is true of multinodular goiters.

But surgery isn’t without risk. A surgeon must avoid damaging the nerve controlling the vocal cords and the parathyroid glands that control blood-calcium levels. Removal of the thyroid gland requires lifelong treatment with a thyroid hormone replacement such as levothyroxine (Synthroid, Levoxyl, others).
Second opinion

Questions and our answers

Q: I recently visited a large medical center for a second opinion. I brought along results from an MRI done at my local hospital, but was told I’d need to have another MRI. Why was that necessary?

A: Advances in imaging technology during the past decade have been tremendous, particularly with magnetic resonance imaging (MRI) and computerized tomography (CT). Although these advances have improved the quality of care, the quality of performing and interpreting these highly specialized tests isn’t always uniform from one medical setting to another.

Ideally, when a particular body part is being imaged, the radiologist tailors the examination to best evaluate the symptoms or disease. For example, if one person has a brain tumor and another has had a stroke, both may undergo an MRI of the head. The difference is that these MRI scans wouldn’t be done in identical fashion. Although both involve the brain, the actual images and the information that they provide are different. That’s because MRI is customized to answer a unique question in each individual.

If previous imaging doesn’t adequately answer the clinical question at hand, the imaging study may need to be repeated. Another possibility is that the quality of the imaging done at a different medical site is adequate, but the interpretation of the images is in question. Under those circumstances, a second interpretation by a radiologist with special expertise in that specific body part may be recommended.

Unfortunately, many insurance companies — including Medicare — frequently won’t cover the cost of repeating an imaging study or of a second interpretation. Even so, obtaining a precise diagnosis by such means may be worth the cost.

Q: I’m considering having a laser hair removal procedure. Do these procedures permanently remove unwanted hair?

A: No.

Laser hair removal uses laser light to remove unwanted hair. Although laser hair removal disables hair follicles for several weeks, or even up to a year or longer, and may slow hair regrowth, it doesn’t permanently remove unwanted hair. Plus, it only works on darker hair.

The effectiveness of laser hair removal varies. For suitable candidates, laser hair removal can reduce hair counts by 20 to 90 percent. But most people can expect at least three to eight treatments spaced six to eight weeks apart before they begin to notice a significant reduction in the hair they have or a slowing of regrowth. Side effects are rare, although crusting or scabbing and a short-lived rash may occur.

For some, maintenance treatments may be needed to keep unwanted hair at bay. Some may need it every few months, and others may need it only once or twice a year. Many people choose not to have maintenance treatments.

Have a question or comment?
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