

The Aging Eye



Age is never a diagnosis. Although certain eye conditions and ailments may become more common with increasing age, not all changes are actual disease and many of these changes require only a relatively simple procedure to solve. It can sometimes be confusing for a patient to differentiate what is part of the normal aging process and what is actual disease. Similarly, what can be treated and what cannot. In this article we hope to clear up some of the most common misconceptions of the aging eye.

Aging is a poorly understood process. We are all born with a unique genetic code, an encoded tendency that makes us more prone towards certain types of physical decline, and that genetic code has a great deal to do with how quickly we age and what we experience along the way. However, the timing of this genetic clock is subject to a small degree by our own actions, depending on what happens to us as we grow up and on how we actually live our lives.

Our organs, including our eyes, are worn down by toxins in our diet and in the environment. These include excessive intake of fat, sugar, caffeine, alcohol, and nicotine. Also by the ultraviolet rays from the sun. Even if you have never touched a cigarette or been a sun worshiper, organs will wear out. Certain lifestyles will just wear them out more quickly. Free radicals are to blame for this. Free radicals attack the structure of cell membranes, creating toxic waste products. With age, the body's cells lose their ability to repair damage caused by these dietary or environmental toxins. Antioxidants prevent some of the harmful effects of free radicals, and antioxidant supplements have been shown effective in certain groups to slow free radical damage.

Eyelid Changes:

Free radicals attack collagen and elastin, substances that keep our skin smooth and elastic. As these tissues begin to break down and gravity takes hold, the process is visible earliest in the face and around the eyes where the skin is exceptionally thin.

The lower eyelids become loose. Reduction in the orbital fat causes the eyes to appear to “sink in”. Progression of these effects result in the eyelid falling away from the eyeball (ectropion). This will result in a watery eye since the lower lid is the “dam wall” that keeps the tears in contact with the eyeball. As the lower lid begins to fall away, the “dam breaks” and the tears spill out onto the cheek. Occasionally the opposite may occur, where the eyelid fold inward (entropion). This will cause chronic irritation from the eyelashes rubbing against the eyeball

Although the underlying cause of these conditions is part of the normal aging process and cannot be prevented, the symptomatic effects can be relatively easily fixed. An oculoplastic surgeon can operate on both of these conditions to tighten the underlying eyelid muscle in order to have it sit where it is supposed to be.

For the upper lids, age-related descent of the brow (brow ptosis) and upper eyelid tissues (dermatochalasis) are common causes for patients to complain of a chronically “tired” look. As with lower eyelid changes, the work of an oculoplastic surgeon can correct this age-related condition. Your medical insurance will often cover the procedure if your eyelids are causing comfort or visual symptoms.

Watery eyes in the elderly, although often caused by eyelid positional changes, can sometimes result from a clog in the tear drain. Your lower eyelid, you may have noticed, has a small hole on the inside corner. This hole is the drain for your tears. It drains your tears down your nose and throat. If this drain gets clogged, however, which is common with age, it is often a relatively easy procedure to have the drain flushed with high pressure water to knock the drain loose. If the blockage is too large to be flushed away, surgery is often a very effective the next step.

Crystalline Lens Changes

When we are born, the lens in the eye is perfectly clear, as a high quality diamond may appear. As we get older, however, this lens becomes progressively more cloudy and amber in color. This is called cataract formation. Cataracts are part of the normal aging process and occur to all of us as a normal result of a lifetime exposure to oxidative stresses. However, certain medical conditions such as diabetes or medications such as steroids may cause a person to get premature cataracts. The time at which an eye doctor calls your clouding lens a cataract may slightly vary. Most doctors reserve the diagnosis of “cataract” for when it becomes cloudy enough to prevent you from being corrected to perfect 20/20 vision. Prior to that it is typically just considered a normal age-related change.

A person with cataracts often complain of glare, especially at night. This is due to light scattering, similar to looking through a foggy window. They will also need more lighting especially when reading due to the cataracts essentially acting like wearing a pair of amber sunglasses. Decreased contrast sensitivity, such as being able to tell the difference between two similarly colored socks, is common due to the discolored lens.

Fortunately, cataracts are very easily cured once symptoms become bothersome with a procedure called “cataract extraction”. During this process a cataract surgeon physically removes your cloudy lens and replaces it with a clear synthetic implant. The entire procedure takes approximately 10 minutes in an outpatient center, many times within the surgeon’s everyday office.

One of the first and most familiar signs of aging also occurs to the crystalline lens. Called “Presbyopia”, this is the condition that affects all of us without exceptions and requires we need reading glasses or bifocals in our early 40s. Presbyopia is caused by normal age related changes in the elasticity of the lens and focusing mechanism of the eye. No matter your lifestyle, nationality, or geographic location, presbyopia is a very predictable, but easily corrected, part of aging.

Vitreous Changes

The vitreous is the fluid-like substance that fills the eye like a water balloon. Composed primarily of water, collagen, and hyaluronic acid, biochemical changes with age cause these substances to clump. If one of these clumps happens to pass through the center of the eye, and light catches it just right, you will notice it as a shadow, called a “floater”. Floaters, although annoying, are completely harmless.

As the eye continues to age, the vitreous liquefies and shrinks. Although difficult to imagine, this mostly water gel-like structure is attached to the retina (the sensory tissue lining the back of the eye) at several locations with what could be considered biological staples. As the vitreous shrinks, these staples get pulled on. Similar to pulling your skin causes you to feel it, when the retina gets pulled on due to the traction between the shrinking vitreous and the retinal it is attached to, you will see it as a flash of light.

Eventually these biological staples let go and the vitreous is released from the retina. This is called a “Posterior Vitreous Detachment” (PVD). Many times this now free-floating “staple” will be perceived by a patient as a floater. Although a perfectly normal part of aging, any new floaters or flashing lights should be evaluated by an eye doctor immediately since occasionally the traction between the vitreous and retina is strong enough to cause a break in the retina. This is considered an urgency and will require urgent laser treatment to seal the break. The only way to know if you are experiencing a normal age related flash of light or floater or an emergency retinal break is through a dilated eye exam. The onset of floater large enough to look like a curtain may indicate a retinal break has progressed to a retinal detachment. This is considered an emergency and will require more extensive surgical intervention.

Retina Changes

The retina is the sensory tissue of the eye. Like film of a camera, it lines the inside surface of the eye. The most important part of the retina is the Macula. The macula is the part of the retina in the very center of the back of the eye responsible for fine detail vision. So although it comprises a small portion of the total retina, it is the most important part for detail vision. Over the course of a lifetime, retinal tissue become less able to remove cell waste from accumulating. So as we age, the retinal cells produce more waste than can be removed. This waste becomes small deposits called drusen. Drusen, to your eye doctor, looks like specks of yellow/white material in the macula. The appearance of drusen is linked to macular degeneration causing distortion and progressive central visual loss.

This degeneration of the macula can eventually progress, leading to new abnormal growth of underlying blood vessels, causing bleeding within the macula. This is called “wet macular degeneration” and is associated with rapid, profound vision loss. Wet macular degeneration accounts for 10% of all cases. There is no cure for macular degeneration.

A 2002 study showed that in 75 year olds, about 50% have at least an early form of macular degeneration. So although it can be expected to be part of the normal aging process, there are some risk factors that make a person more likely to be in that 50%, or have the degeneration progress more quickly. The strongest modifiable risk factor is smoking (3x the risk). Other factors include exposure to UV light, hypertension, and cardiovascular disease.

Although there is no treatment, medical or surgical, for the dry (non-bleeding) form of macular degeneration, at least a couple large studies have shown that antioxidant supplements with lutein will slow the progression. You may look up AREDS 2 study to learn more about the vitamins you should be taking. Although this study showed vitamins can slow the progression once a diagnosis of macular degeneration is made, the study was unable to prove any benefit of taking the vitamins proactively for prevention of onset.

For wet macular degeneration, a retinal specialist will give the patient periodic injections into the eye of an anti-VEGF medication. These medications essentially halt the growth of new, abnormal blood vessels and therefore stops the active bleeding within the macula. Vision will not be restored to 20/20, however.

Although many condition arise with age, it is important to distinguish normal age related changes with active disease so that the best course of treatment may be pursued. Only a comprehensive eye exam by your eye doctor can determine the best course of action for you. Don't let your patients inner voice telling them "it is just my age" keep them from getting the help that they need.

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