Vision Shooting and Aging — Effects of Age on Your Shooting

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In part one of this two-part series, I talked about the optical correction of shooting related vision problems that show up with “the passage of time” (my euphemism for getting older.) Now we’re going to look at some of the changes that the eye itself undergoes with, well, the passage of time. This topic is a bit more serious than the visual aspects, and in some cases there may not be too much we can do, except to work around the changes that occur.

Cataracts

A cataract is a clouding of the crystalline lens, which sits just behind the iris of the eye. As we age, it begins to lose clarity, starting with a yellowish, translucent appearance. From there, a cataract can remain stable for many years, or could become rapidly less transparent, depending on the type and location of the cataract, and there are even “combined forms” cataracts, in which more than one area of the lens is affected.
Cataracts will have a greater impact on the vision if they are located centrally, and one type, situated towards the back of the lens, can reduce the vision dramatically. Often, as a cataract progresses, we can improve the visual acuity (the “sharpness” of vision) simply by changing the eyeglass prescription, but at some point, the cataract can progress to where it becomes necessary to have it removed surgically. This surgery is the most common procedure performed in the US, and the success rate is in the high 90’s.

For the past four decades or so, cataract surgery has included the implantation of an artificial lens, called an intraocular lens, or implant, which often eliminates the need for a distance Rx, but still requires the use of glasses for reading, computer use, or focusing a front sight. There are multifocal implants available, and the technology for these is improving, but still has a way to go.

The effect of a cataract is twofold: it causes a blurring of objects, and it causes cloudy or filmy vision, much like a foggy windshield. The cloudiness causes glare (e.g. oncoming headlights), and reduces the eye’s sensitivity to contrast, so driving becomes difficult at dusk and night. If you have a cataract, you might find it harder to see the text in the gray box in the picture below. And if you don’t have a cataract, then you might simulate one by squinting until it becomes difficult to see the text on the low-contrast side, while the high-contrast side might still be quite readable.
So a cataract can reduce not only the visual acuity of the eye, it can reduce the contrast sensitivity as well, and it’s the loss of contrast sensitivity that can be more disabling. I’ve seen patients with dense cataracts that can still see quite well on my acuity chart, which is solid black letters on a bright white background, but they have a harder time getting around than we might expect, based solely on the visual acuity measurement.

**Cataracts will affect shooters in different ways, depending on the conditions in which you are shooting.** Brightly lit, high-contrast targets might not be too much of a problem, but for low light, the ability to see the target can be impaired. Sights can be blurry or difficult to discern in dim light though lighted sights or scope reticles can help.

There have been **some people with cataracts who have benefited from the use of tinted lenses** to enhance contrast, and yellow tints seem to do the best job of it though some prefer that amber-brown (“blue blocker”) tint, which tends to throw off color perception. A yellow tint reduces the scattering of light and makes the scene seem brighter on an overcast day. (I haven’t had any experience with other types of tints used in shooting, but that could be a subject for a future article.)
If there is good news about cataracts, it’s that the surgery to remove them has improved tremendously over the past few decades. **Modern cataract surgery is quick, painless, and has a huge success rate.** Many people remove the patch the next day to find their vision has returned to what they had experienced when they were many years younger. The haziness is gone, the color vision returns – people tell me they could once again see violet and purple again – and the acuity is restored. If you have cataract surgery, you will need to take drops for the first few weeks, to prevent infection and reduce inflammation.

After cataract surgery, **you might still need an over-correction in the form of glasses** to get the best sharpness. This is due to a residual refractive error, but many people who have worn high prescriptions are happy to see that, by choosing the correct implantable lens, the surgeon can eliminate most of the correction they needed before surgery.

Also, after cataract surgery, the eyes are set to focus at long distances, so **you might still need a little bit of a correction to get your front sight in focus.** The info I covered in Part 1 of this series applies in the same way.

### Floaters

I seem to hear questions about floaters from shooters because floaters can be annoying, especially if they are located centrally in the field of vision (as are a couple of the ones I have.) **A floater is any translucent or opaque object floating around in the vitreous,**
which is the gel that fills the rear chamber of the eye. They are pretty common, and more so in the older population. They can look like small spots, or shadows, or even resemble bacteria as seen under a microscope.

Floaters can be more visible at some times and less so at others (depending on lighting conditions). In most cases they are not a sign of anything serious. If you notice a sudden increase in floating spots or spontaneous flashes of light for no apparent reason, you should call and have your eyes checked ASAP, since they can (on rare occasions) be a sign of retinal detachment, which is a true ocular emergency.

I suspect that shooters, as a group, are more attuned to small changes in their vision, because of the need for precise vision when shooting. There are many people I see that have floaters but have never noticed them, and I often find this surprising. But if you shoot, and have floaters, you’ve probably been aware of them. When you find out what I do, it’s likely to be the first thing you’d ask about, if we ever had the chance to meet.
The other question I’m asked regarding floaters is “Can anything be done to remove them?” Excellent question!! Traditionally, the thought of removing floaters would involve opening up the eye surgically and vacuuming them out, and trying to remove them in that manner is something that would not be worth the risk, which would include infection, retinal detachment, and a few other undesirable things. However, there is research being done to ablate (“zap”) them with a precisely-focused laser, but that procedure is still in the research stages, and we can hope it someday becomes widely available.

Age-Related Macular Degeneration (AMD, ARMD)

The leading cause of vision loss in the over-65 population, macular degeneration causes loss in the very center of the retina: the macula, which is the part you use when you’re looking right at something. Of the two types, Wet and Dry, the former can cause an almost instantaneous loss of central vision, while the latter is characterized by a slow, progressive loss. It does have some tendency to show up in families, and age itself is a risk factor. Other risk factors include smoking, hypertension, and obesity, and while age and family history can’t be controlled, these last three can be. In most cases, once the vision has been lost, the loss is permanent, which is why a lot of research is being done in ARMD. The widest, and most widely known of these studies is the Age-Related Eye Disease Study or AREDS. The goal of this study was to determine risk factors and whether or not there was a benefit to nutritional supplementation (Vitamins A, C, E, Beta Carotene, and Zinc) to slow or halt the progress of the disease. It turns out that there was a benefit to such supplementation, but people who smoke were advised not to take them, as they could cause more damage in smokers.
And update, called AREDS-2, has refined the results of the original study, and if you look in the vitamins section of a pharmacy or grocery store, you will see dozens of products that say “AREDS-2 Formula” on them. At this time, the benefit has been shown if you already have some early signs, but if all you have is a positive family history, no benefit has been demonstrated (and take the vitamin companies’ claims with a grain of skepticism.)

The best summary I’ve seen can be found at the National Institutes of Health.

As for the effect on shooters, the story becomes a bit more complicated and a bit less optimistic here. Since ARMD takes away vision in the area, you’re looking directly at, and because that loss is most often permanent, the use of high magnification can sometimes help. There are “Low Vision Specialists” who work with people whose vision is limited in some way (ARMD being one of the most common), and they can provide tools and strategies to utilize the vision that is left.

Having spent some time watching trap shooters, it’s come to mind that they are using a lot of knowledge of spatial perception, localization, and predicting the trajectory of a target. In speaking with some top trapshooters at last year’s Grand American Championships, I found that their sighting was much different from that of target rifle shooters and perhaps less dependent on the sharply focused sight picture that rifle shooters employ.

Now, with any of the above age-related eye diseases we’ve discussed, there is no effect on the ability to perceive the location of a target, even if you cannot see that target clearly. By using the remaining vision (in cases of ARMD), I might suggest that knowledge of the scene, or even setting up cues that involve peripheral vision, can enable someone to perform target shooting.
Those that have lost central vision from ARMD can learn to use an off-center area of the retina for reading and identifying faces, etc. In theory, this technique, called *eccentric viewing* or *eccentric fixation*, should enable someone to determine a target’s location. If you’ve ever looked at a star at night only to see it disappear, but then you brought it back by looking just adjacent to it, then you’ve done eccentric fixation (needed because the very center of the macula is not as sensitive to light as the surrounding area.

If you like technical stuff, *check this out*.

**Blind Shooters?**

Yes indeed, some people work with *shooters who have reduced vision*. Even many who are considered blind are still able to enjoy the sport of shooting. One approach has been the use of auditory cues in the form of tones played through a headphone; as the shooter aims, the tone changes as the center of the target is “sighted.”

The organization *British Blind Sport* helps those with little or no vision to participate in target shooting as well as many other sports, and the *Disabled Shooting Project* provides opportunities for the visually disabled to take part in shooting.
In the US, http://www.adaptivesportsmen.org/ gives opportunities for those with visual impairments to shoot and even to participate in hunting. Their Facebook page is located at https://www.facebook.com/AdaptiveSportsmen

In summary

Some changes occur in the eye as we age, some which can be helped, and some for which the answers are still being sought. In the meantime, such strategies as a proper optical correction, tinted lenses, magnification (scopes) and even eccentric fixation can enable the shooter to achieve a high level of success despite the reductions in vision. Cataract surgery is very successful in clearing vision, and optical corrections can restore the clarity of your front sight.
Shortly, I feel that we will continue to see significant advances in the control, treatment, and prevention of the diseases that can cause vision loss for shooters.

Note: as I was writing this article, I came across another new treatment for ARMD that is currently being researched, and the results are quite promising in that this study showed gains of up to three lines on the visual acuity chart.

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