

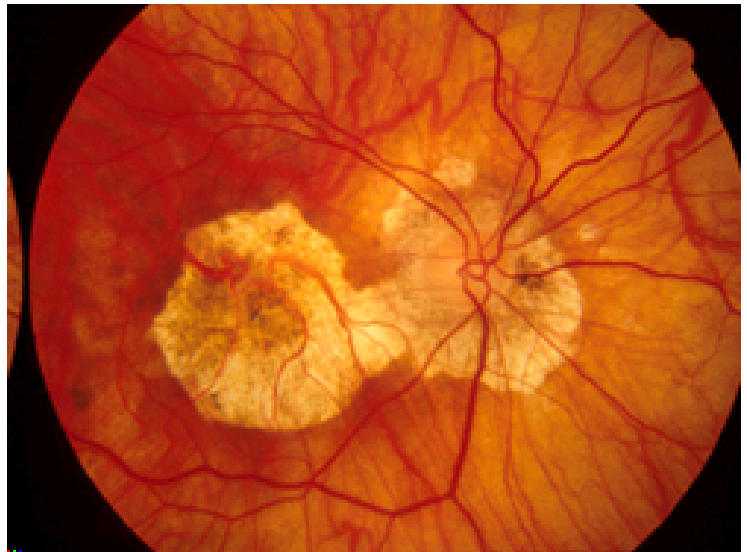
Myopic Degeneration

by Judy Prevost

Overview

The word "Myopia" is derived from the term "muopia," which, in Greek, means to "close the eyes." It manifests itself as blurred distance vision, hence the popular terms "shortsightedness" and "nearsightedness."

Myopia is a condition whereby images come into focus in front of the eye, resulting in a blurred image on the retina. The more severe the nearsightedness, the farther the image is from the retina, which results in more blurry vision in the distance.



Myopia causes light rays to focus on the front of the retina. As a result, close objects are seen clearly, while distant objects appear blurred. Near vision, however, can deteriorate to a level where reading even close to the face can become difficult.

There are three ways for an eye to become myopic:

- The front surface of the eye (the cornea) is too curved and, therefore, too powerful.

- The eyeball itself is too long.

- A combination of both of the above.

In many cases, myopia will stabilize when the growth process has been completed, and glasses can offer normal vision. Higher levels of myopia, however, tend to be hereditary, meaning that if there is a moderately or highly nearsighted parent, the odds are higher for one of the children to be myopic.

Myopia that develops in childhood is often called juvenile onset myopia, which almost always increases in severity with the progression into adulthood.

In the more severe chronic cases ("high degree," or "pathological" myopia), there is the possibility of sight loss. The deformation of the eye creates stress on the retina, which can become damaged or detached, and this can then provoke additional changes. This is especially true in degenerative myopia, which can lead to macula problems (not to be confused with age-related macular degeneration).

There are at least four other clinical types of myopia: simple, nocturnal, pseudo, and induced. For the purposes of this article, degenerative myopia is described here.

Myopic Degeneration

About one third of the myopic population has degenerative myopia, an incurable condition that can lead to legal blindness. Since nearly 30% of Americans are myopic, this accounts for approximately 10% of the U.S. population. This condition can start at birth, but most often starts during the pre-teen years, and it is believed to be hereditary.

Degenerative myopia is more severe than other forms of myopia and is associated with retina changes, potentially causing severe vision loss. It progresses rapidly, and visual outcome depends largely on the extent of fundus and lenticular changes. The diagnosis of degenerative myopia is accompanied by characteristic chorioretinal degenerations. Pathologic myopes, particularly those with higher refractive errors, are at risk for retinal detachment and macular changes.

Patients with degenerative myopia typically complain of decreased vision, headaches, and sensitivity to light. If retinal degeneration or detachment is present, patients may also report light

flashes and floaters, which are associated with retina changes. Those with degenerative myopia have an increased incidence of cataract formation (nuclear cataracts are most typical).

Some of the most typical features of degenerative myopia are:

- Vitreous liquefaction and posterior vitreous detachment
- Peripapillary atrophy appearing as temporal choroidal or scleral crescents or rings around the optic disc
- Lattice degeneration in the peripheral retina
- Tilting or malinsertion of the optic disc, usually associated with myopic conus
- Thinning of the retinal pigment epithelium with resulting atrophic appearance of the fundus
- Ectasia of the sclera posteriorly (posterior staphyloma)
- Breaks in Bruch's membrane and choriocapillaris, resulting in lines across the fundus called "lacquer cracks"
- Fuchs' spot in the macular area.

A diagnosis of degenerative myopia depends on the presence of chorioretinal degeneration or lacquer cracks.

Myopic degeneration is one of many disorders that can also cause damage to the macula. It is more severe than other forms of myopia and is associated with retinal changes, potentially causing central vision loss.

Myopic degeneration is similar to MD in that it causes loss of central vision due to degeneration of the macula cells. This is caused by separation of the retina as a result of abnormal stretching of the eyeball. This usually happens because the back of the eye is larger than normal when the eye is very nearsighted. Marked thinning and stretching may lead to break down of the macula, surrounding retina and it's underlying tissue. This will cause a varying amount of blurred vision. The management of degenerative myopia should include appropriate treatment for retinal complications. Patients should be educated about the symptoms and possibility of retinal detachment, and the need to seek immediate care.

Below is a Slab section from the Cirrus Optical Coherence Tomography. This shows the myopic degeneration crescent in this eye. It has gone through the central visual area the fovea hence the vision is reduced to 6/36. The Cirrus Optical Coherence Tomography can compare the slab section from one visit to the next and determine if there has been any increase. In this case over one year just very marginal change. However by doing these scans one can understand more clearly how affected the retina is and if this has changed. As yet no treatment is possible but the cell death or apoptosis at the edges of the myopic degeneration may be something that will be amendable to treatment in the future and much research is undergoing in these areas.



There is no generally accepted treatment for myopic degeneration. Occasionally, abnormal blood vessels may grow beneath the retina. These may be treated with laser in the same way that abnormal blood vessels (subretinal neovascularization) may be treated in age-related macular degeneration (AMD), depending on their size and location. AMD is not more common in patients with myopia.