



Myopic Degeneration

Myopia is commonly known as nearsightedness. If you are nearsighted, you can see objects up close but not far away. High myopia is defined as more than 6 diopters of nearsightedness. Myopia is caused by both genetic and environmental factors, including decreased outdoor time and increased near visual work. Myopic degeneration, or pathologic myopia, refers to abnormal changes of the retina that can occur as a result of high degrees of myopia. In general, if your eye has high degrees of myopia, then you are at higher risk of developing myopic degeneration.

VISION LOSS IN MYOPIC DEGENERATION

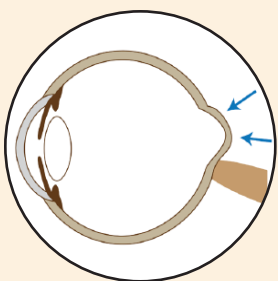
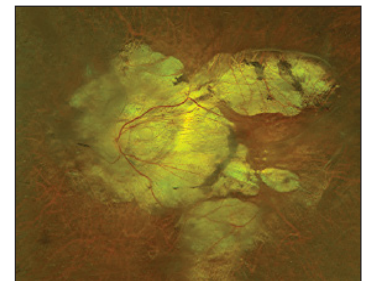
Myopic degeneration specifically refers to thinning of the eye tissues. This progressive thinning increases the risk of vision loss due to:

- **RPE Attenuation or Staphyloma:** thinning of the retina with central vision loss
- **Choroidal Neovascularization (CNV):** abnormal blood vessel growth under the retina
- **Myopic schisis:** splitting of the retinal layers
- **Lacquer cracks:** breaks in a protective layer under the retina
- **Fuchs Spots:** thickened portion of the retina from previously abnormal blood vessel formation

WHAT IS RPE ATTENUATION AND STAPHYLOMA?

The RPE is a pigmented barrier layer on the back surface of the retina. Eyes with myopic degeneration can experience loss of patches of RPE, which can result in permanently decreased vision. Staphyloma refers to a severe thinning and bulging out of the back eye wall, which is typically accompanied by severe RPE loss as well.

RPE attenuation or loss results in patches of the retina without the normal pigmentation. In the picture to the right, the normal orange/red pigmentation is missing in large areas that appear white because the sclera (white wall of the eye) is now visible instead of being covered by the RPE and other related layers of tissue.



Posterior staphyloma (staphyloma posticum) is a localized bulging out of the back wall of the eye (blue arrows). Myopic eyes are generally longer than non-myopic eyes, and posterior staphyloma is seen in the most severe cases of myopia. Staphyloma is often accompanied by RPE attenuation.

WHAT ARE LACQUER CRACKS AND FUCHS SPOTS?

Lacquer cracks are breaks in a protective layer under the retina called Bruch's membrane. They are visible on examination as yellowish lines under the retina, and they increase the risk for developing myopic choroidal neovascularization (discussed below) as well as small bleeds that resolve spontaneously and are not due to choroidal neovascularization.

Another common finding in myopic degeneration are Fuchs spots, which are areas of thickened pigment under the retina that are due to areas of myopic choroidal neovascularization that have resolved.

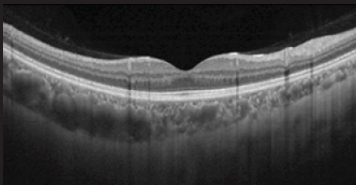
WHAT IS MYOPIC CHOROIDAL NEOVASCULARIZATION?

Myopic choroidal neovascularization (CNV) is an abnormal growth of blood vessels under the central retina, resulting in fluid leakage or bleeding that blurs the vision. Myopic CNV is most often treated with injections of anti-VEGF medication into the eye.

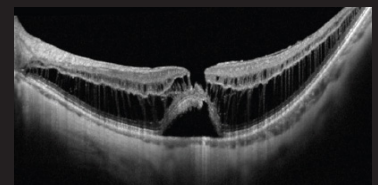
- Bevacizumab (**Avastin**) is an anti-VEGF medication used off-label for myopic CNV
- Ranibizumab (**Lucentis**) is the only FDA-approved anti-VEGF medication for myopic CNV

WHAT IS MYOPIC SCHISIS?

Myopic retinoschisis, or myopic schisis, is the splitting of retinal layers in the central retina. The retina has multiple layers of neurons like a sandwich. In very nearsighted eyes, the steep curvature of the back wall of the eye causes a pulling away of the front layers from the back layers. Myopic schisis is challenging to treat; surgery can be helpful in select cases but in most cases observation is appropriate.



Optical coherence tomography (OCT) is a diagnostic test often used to identify myopic schisis. The OCT cross section on the left is normal, while the OCT cross section on the right shows myopic schisis with splitting of the retinal layers and a small central detachment.



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