Optometry Tidbit
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Layers of the Human Eye

Almost every one of us has seen how a human eye looks like from just looking in your own mirror, but what if you could see though the entire eye all the way back to the retina or the optic nerve. Wouldn’t that be an exciting tour to take?!

Figure 1: Anatomy of the human eye

Many believe that the 1st layer of the human eye is the cornea, but it is actually the tear film. The tear film is made up of three layers: oil, water and mucus. The oil locks in the water, so it won’t evaporate easily and the mucus serves as a foundation for the water and oil to hold on the cornea. The tear layer keeps the eye hydrated, nourished and free from harmful bacteria.

The 2nd layer of the human eye is the cornea, a transparent dome shaped tissue that consists of 5 layers starting from the top to bottom: the epithelium, Bowman’s layer, the stroma, Descemet’s membrane and endothelium. The main purpose of the cornea is to help focus light that is entering the eye. Behind the cornea is the anterior chamber, an area where aqueous humor fluid flows in and out to rehydrate and nourish the cornea.

The 3rd layer of the eye is the iris, which looks like a pigmented disk-like tissue that can widen and close to regulate the amount of light that can enter the eye. The middle opening of the iris is called the pupil. The iris has 3 layers: the endothelium, the stroma and the epithelium.

After the iris is a transparent crystalline lens, which is composed of 4 layers from starting from the surface to center: capsule, subcapsular epithelium, cortex, and nucleus. The lens acts by focusing light rays onto the retina. However, before the light rays hit the retina, it will first go through the posterior chamber and the vitreous humor, which makes up 80% of the entire eye. The vitreous humor is a clear, jelly-like substance that helps retain the shape of eye.

The 5th and innermost layer of the eye is the retina. It has a total of 10 layers that have light sensitive cells which include rods and cones. These light sensitive cells create signals that travel down the optic nerve and to the back of the brain for further understanding of what we are seeing. The 6th layer of the eye is the choroid, which is filled with blood vessels that help supply blood to the retina. Finally the last layer of the eye is the sclera, a white tissue that covers the whole eye (until the cornea) with muscles attached to allow movement of the eye in the eye socket.

Although, there many layers within the eye, that there are also many other processes such as the ciliary body which produces the aqueous humor in the anterior chamber and suspensory ligaments that keep the lens in place.

Figure 2: Layers of the retina including the choroid and sclera
Sources:

Figure 1:
http://www.images.missionforvisionusa.org/anatomy/uploaded_images/retinamicrolabeledcopy-769966.jpg

Figure 2:
http://www.matossianeye.com/doylestown/images/ANATONY2.jpg

http://www.tedmontgomery.com/the_eye/


http://www.stlukeseye.com/anatomy/TearFilm.html