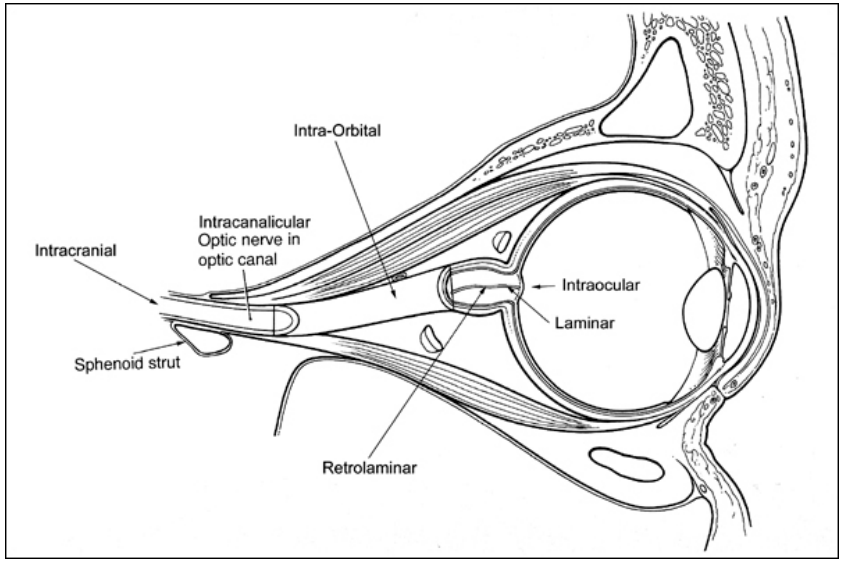
Using the Ophthalmoscope: Viewing the Optic Disc and Retina



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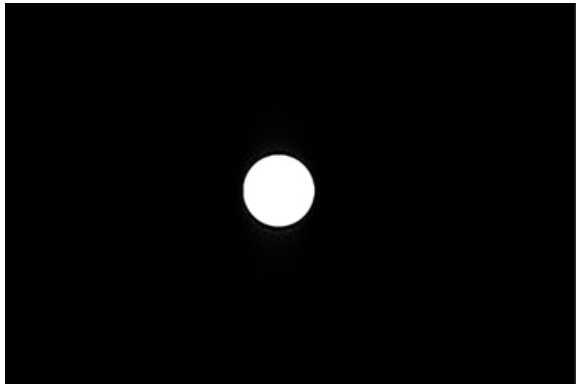
John A. Moran Eye Center

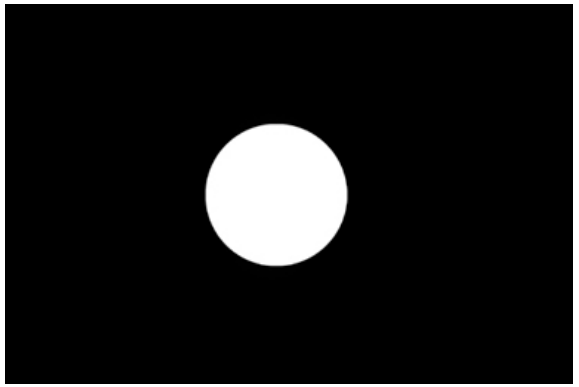
THE OPHTHALMOSCOPE

DIRECT OPHTHALMOSCOPY

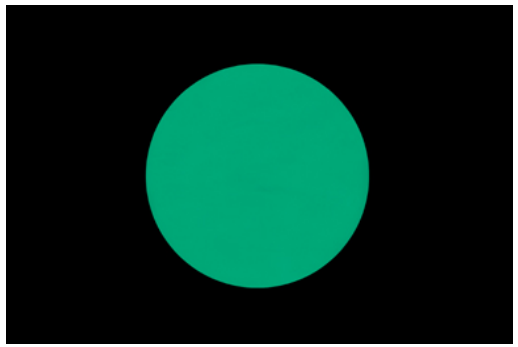
- Jan Purkinje 1823
- Hermann von Helmholtz 1851
- Hand held ophthalmoscope
- Direct up-right image

Dials of the Ophthalmoscope

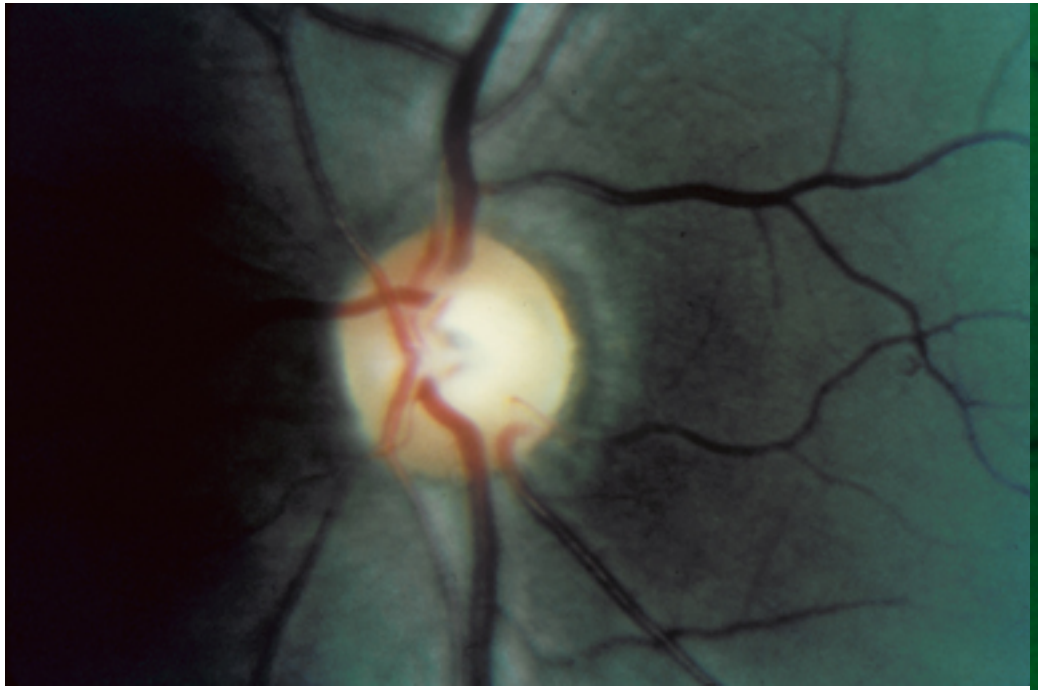


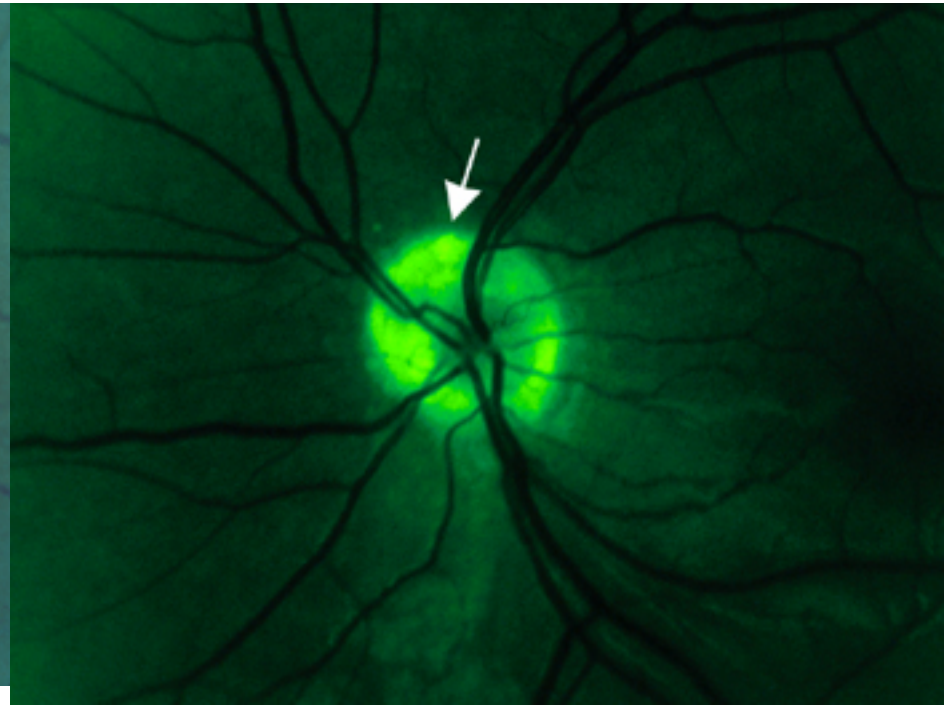


RED-FREE FILTER (GREEN LIGHT)

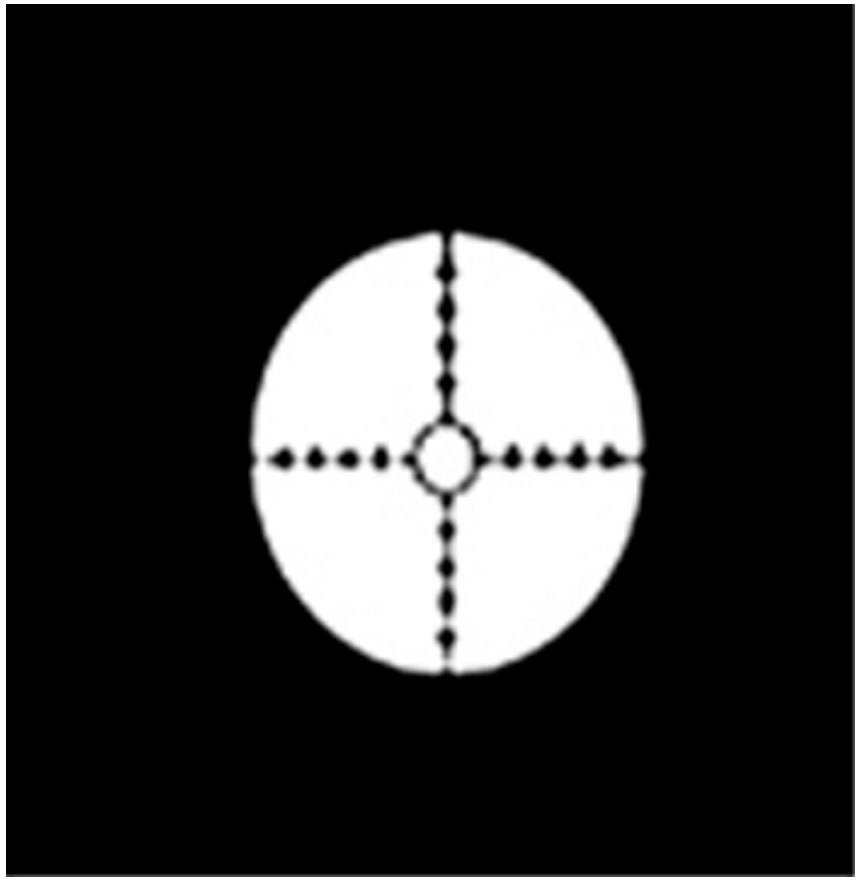


450 nm monochromatic light
nerve fiber layer
optic nerve drusen





OTHER DIALS



- Used for measuring lesion size
- Looking for the center of fixation

OTHER DIALS: SLIT BEAM

The wheel has lenses of power

Panoptic-ophthalmoscope

- Direct type
- Wider field of view
- Distance from pt greater
- Similar apertures

- Not as easy to carry
- Slightly dimmer light source
- Not as magnified view of Disc
- Clean the rubber cup between patients

Photographs: http://panoptic.welchallyn.com/faq.html

Other ways to view the disc and fundus: Hand-Held non-mydriatic cameras

From Kowa-europe.com

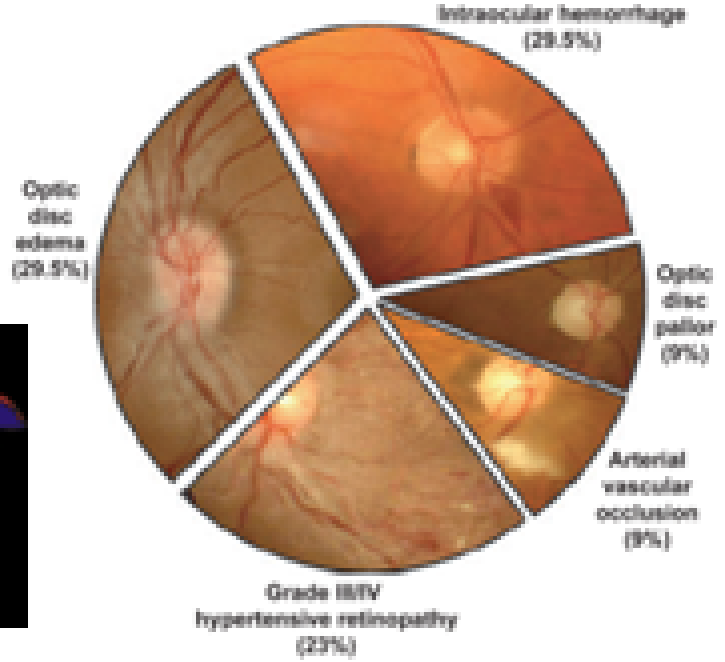


Figure 2. Pie chart showing the distribution of the 44 relevant findings observed among 350 patients. The photographs in each slice were taken during the study.

From Bruce et al Academic Emergency Medicine 2011; 18: 928-933

WHEN EVER POSSIBLE: DILATE THE PATIENT

Steps to Direct Ophthalmoscopy

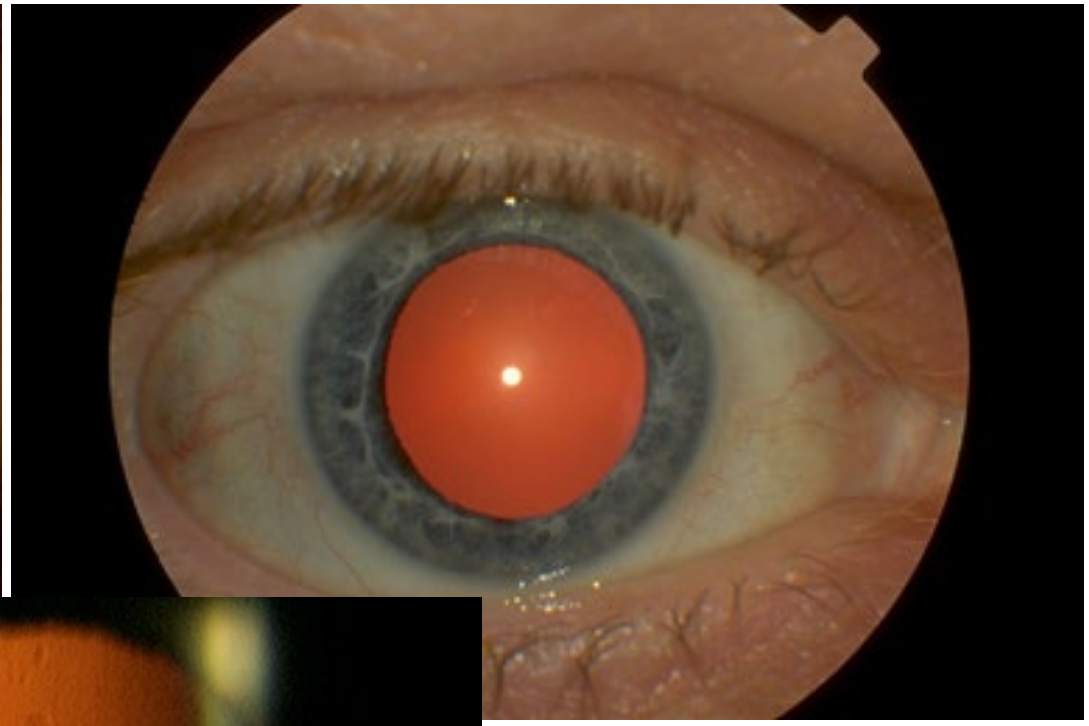
- Dimly lit room
- Dilating drops
- Patient fixates distant target
- Align yourself
- Red reflex
- Dial in

HOW TO USE THE DIRECT

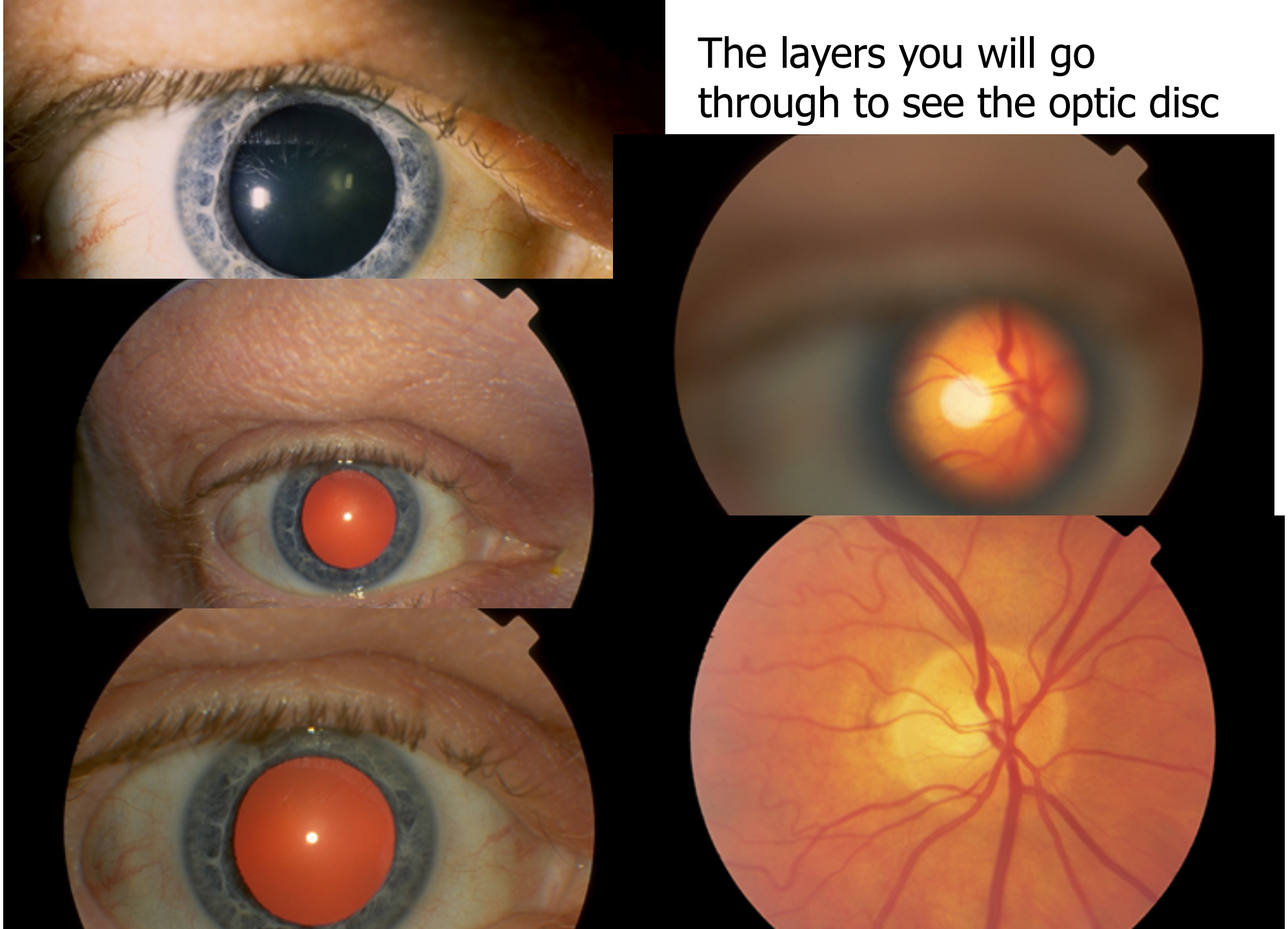
Ophthalmoscope.avi

ophthalmoscope.wmv

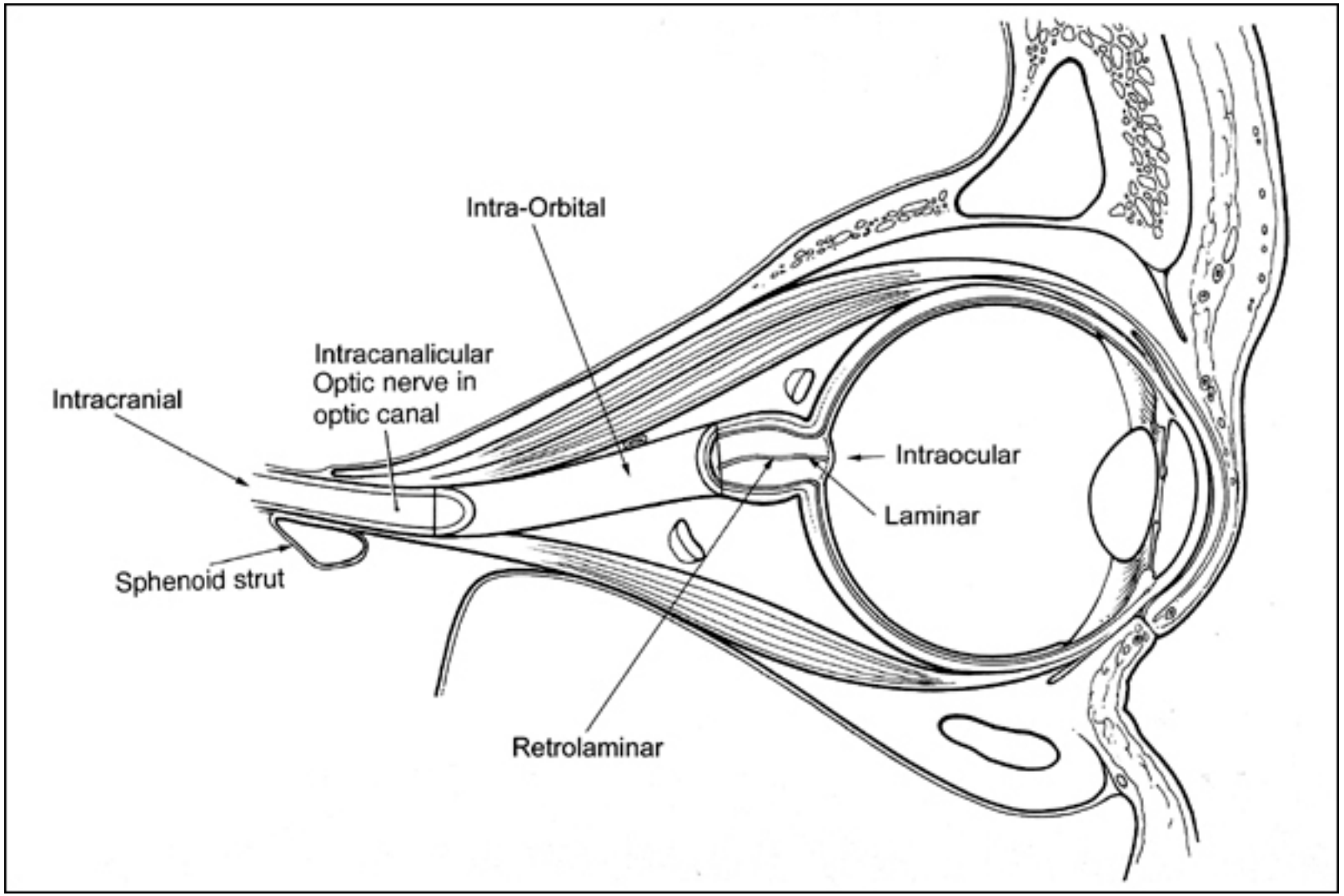
THE RED REFLEX



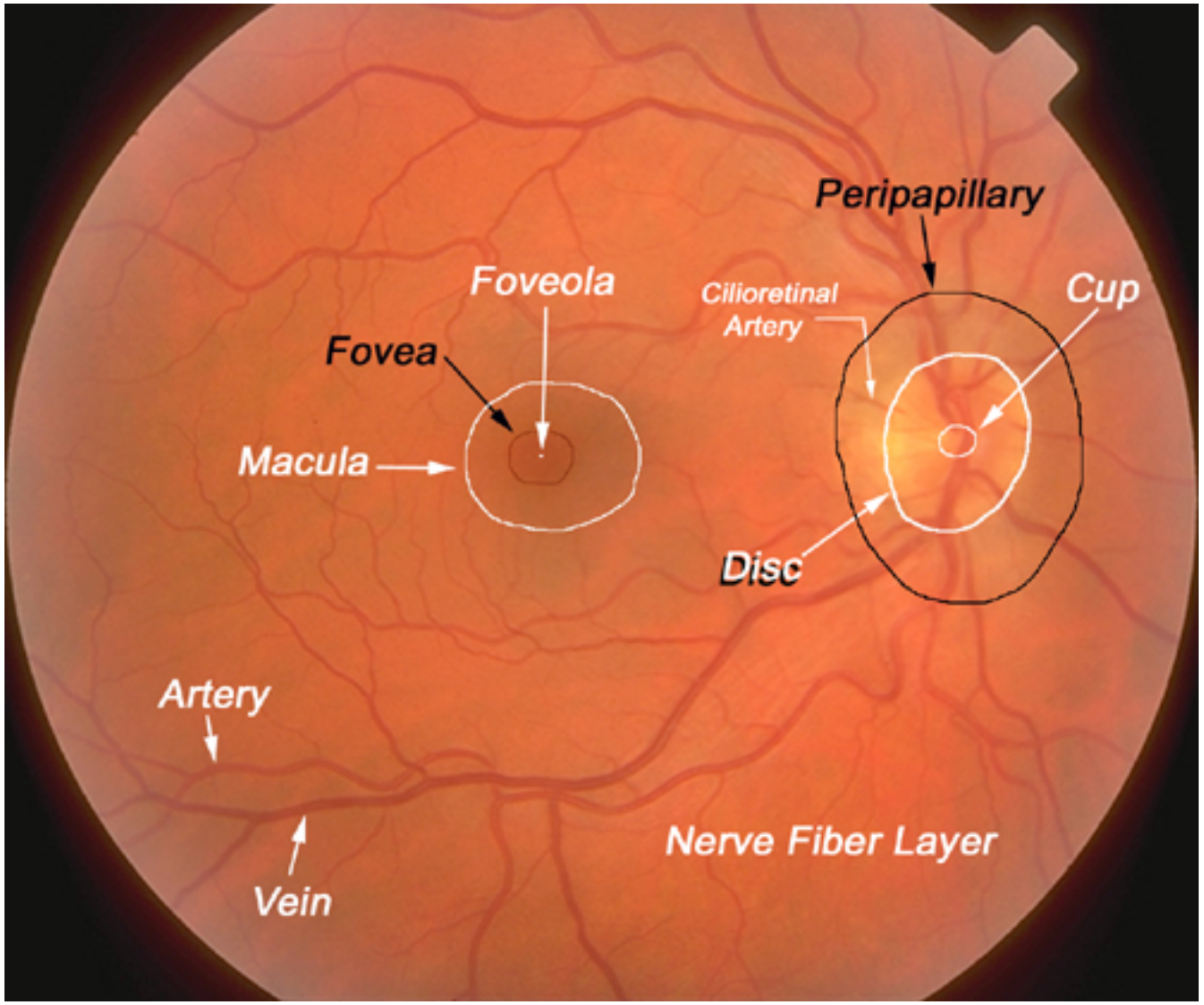
The layers you will go through to see the optic disc



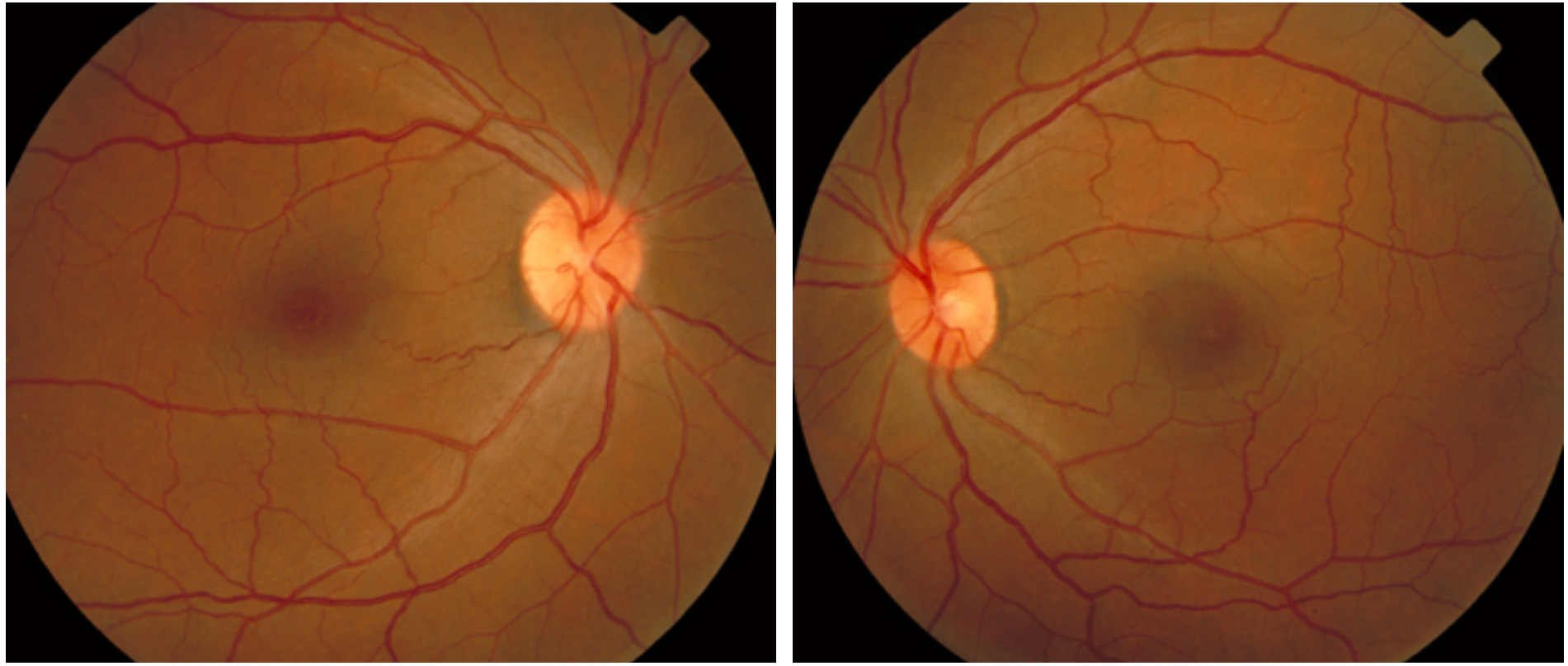
THE OPTIC NERVE



WHAT YOU SHOULD OBSERVE IN EVERYONE

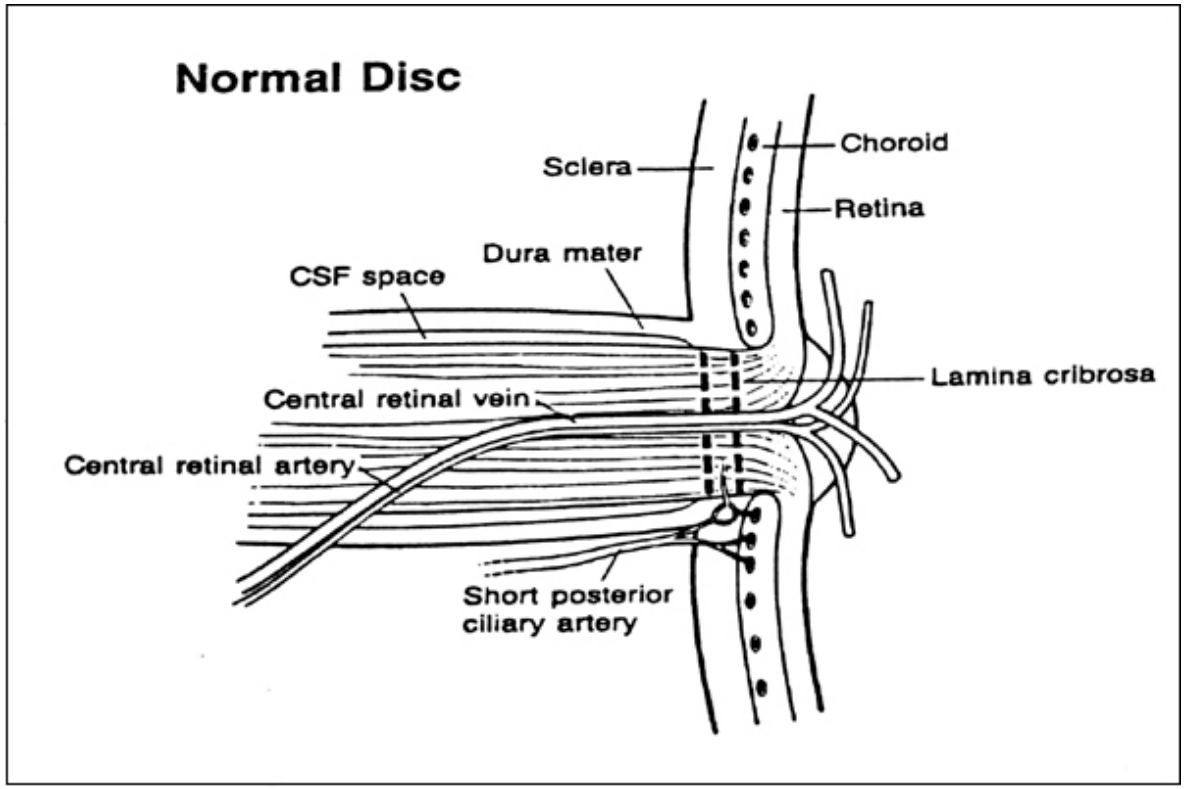


RIGHT EYE AND LEFT EYE

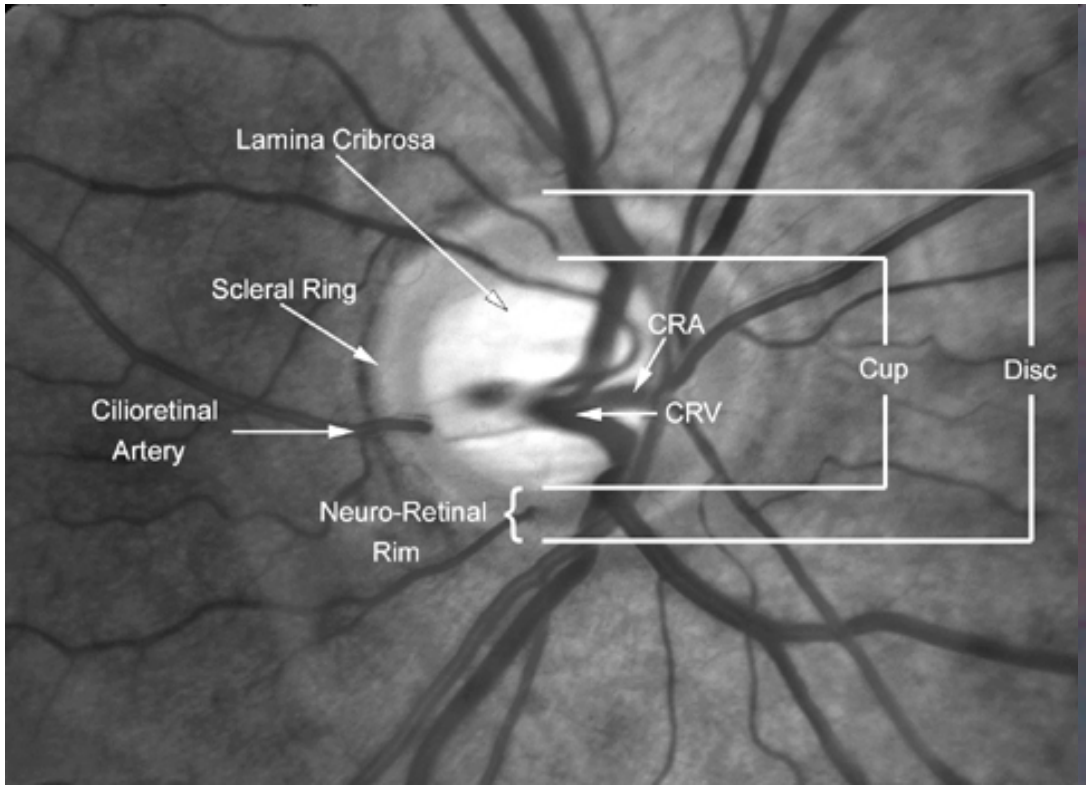


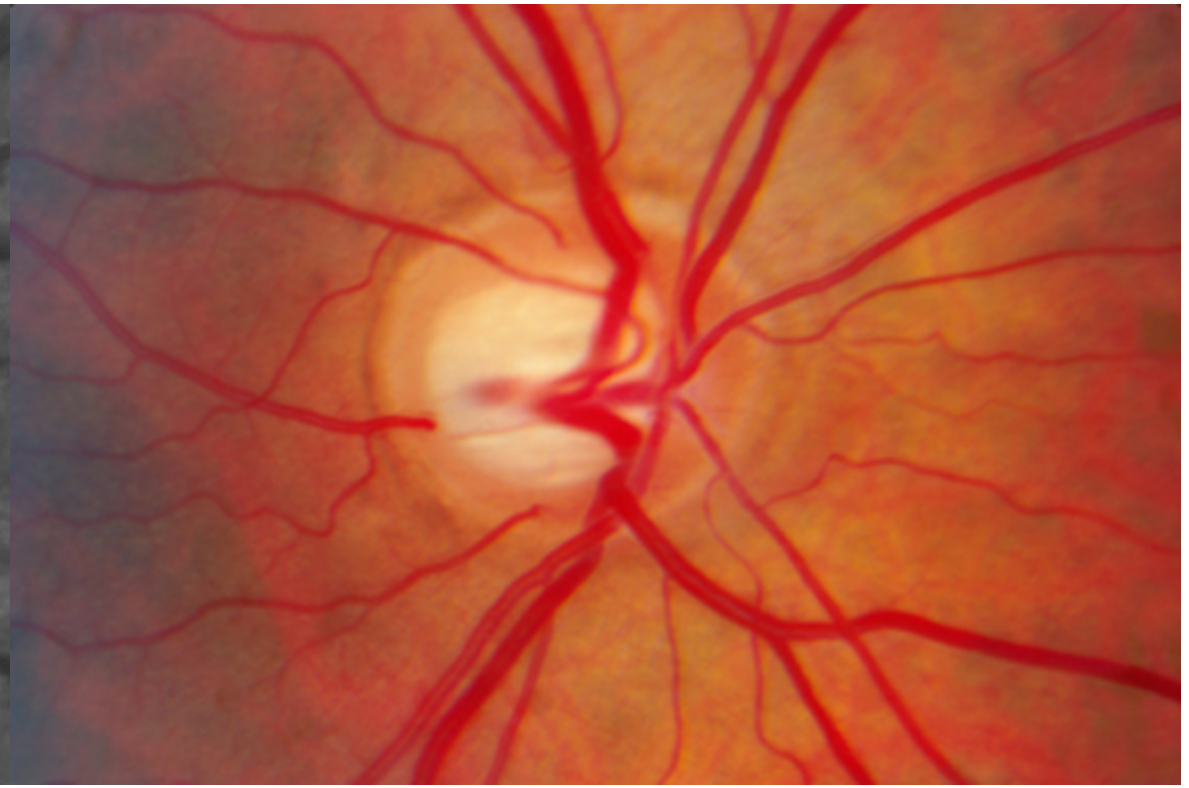
THE NORMAL DISC

- The disc is 1.62 mm or 1 million fibers
- Central retinal artery and vein
- Lamina Cribrosa
- The optic cup

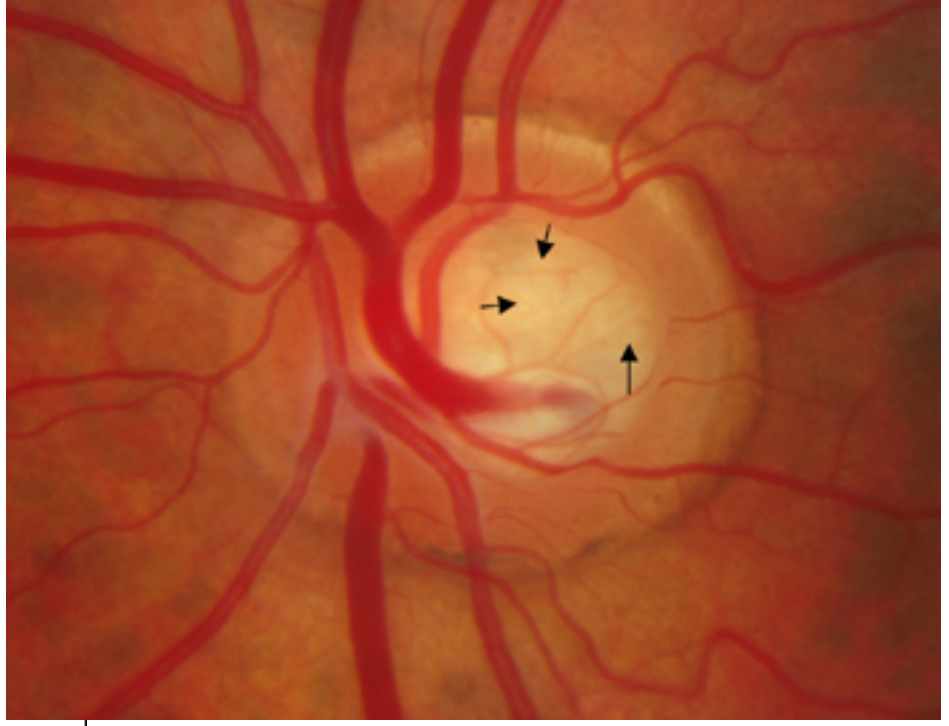


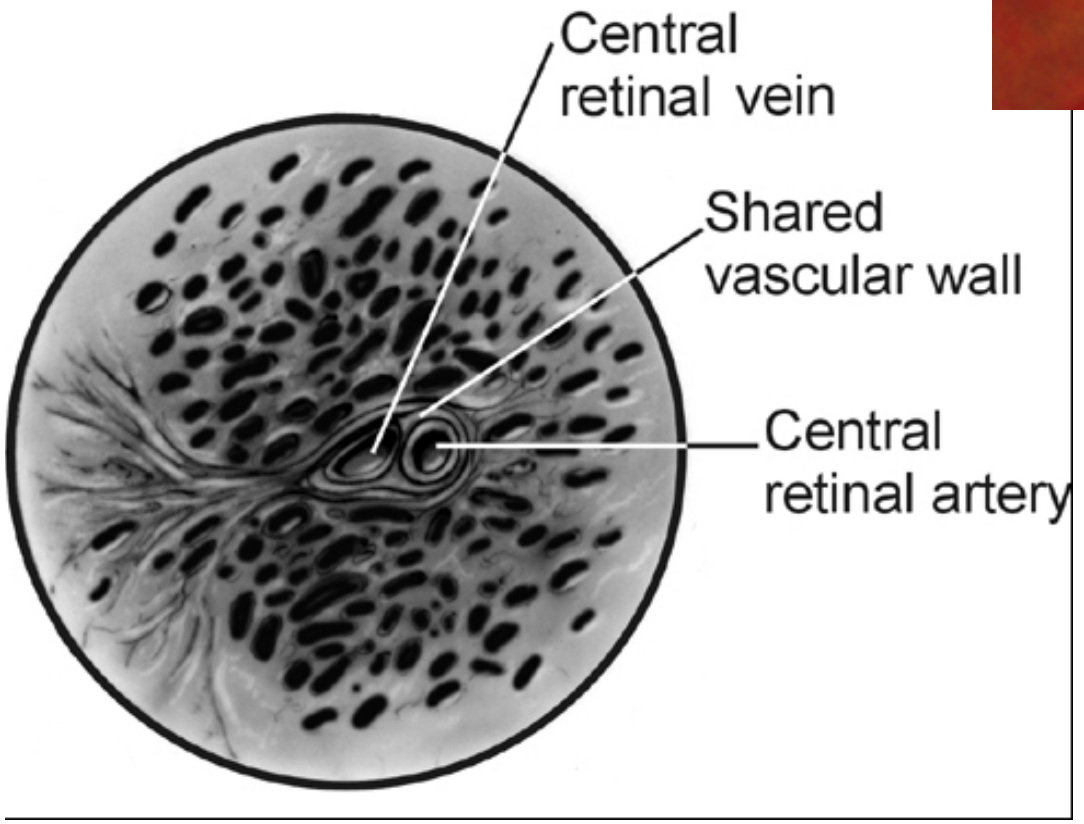
The Normal Disc Appearance





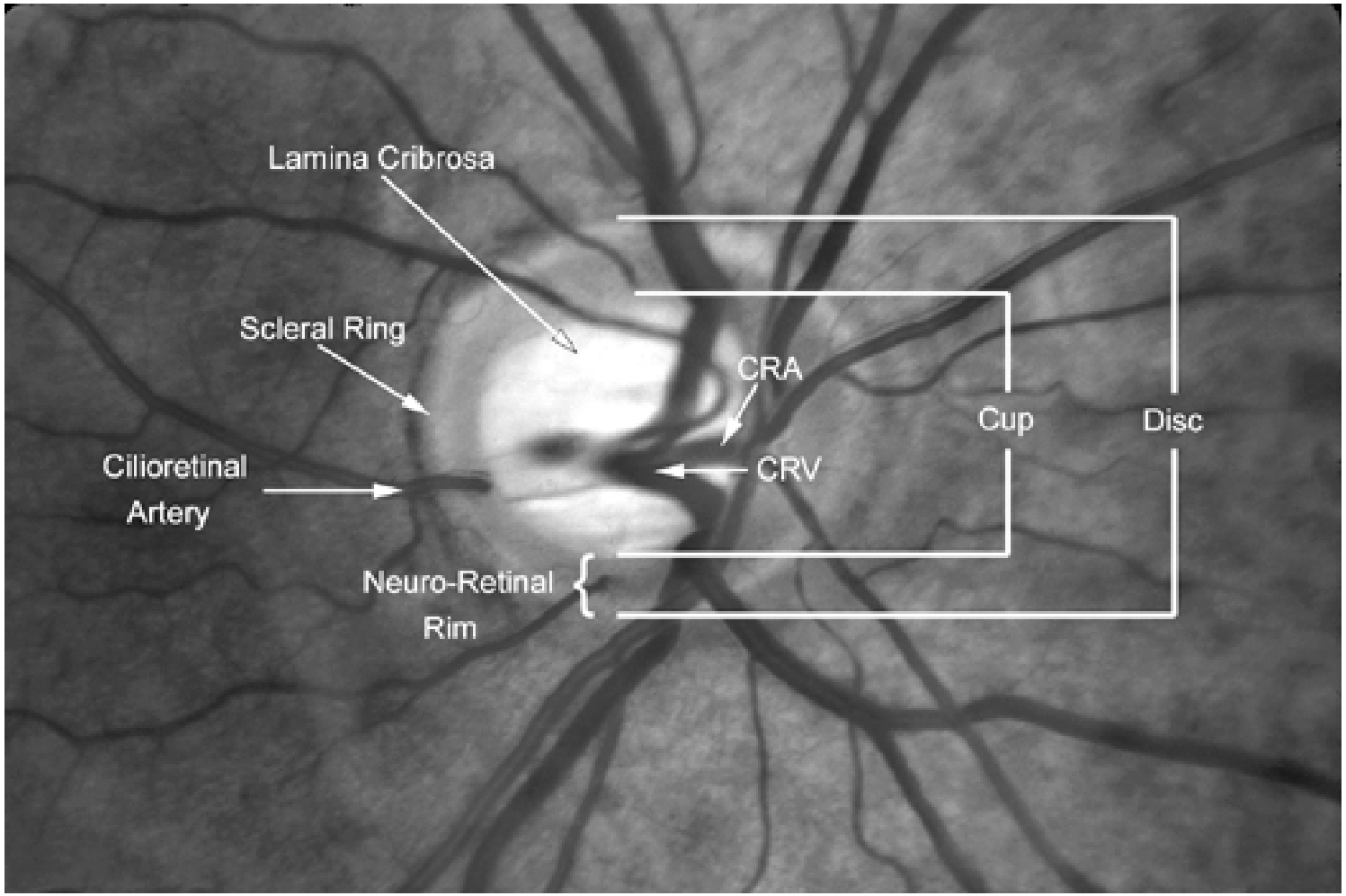
The lamina cribrosa is an important disc structure



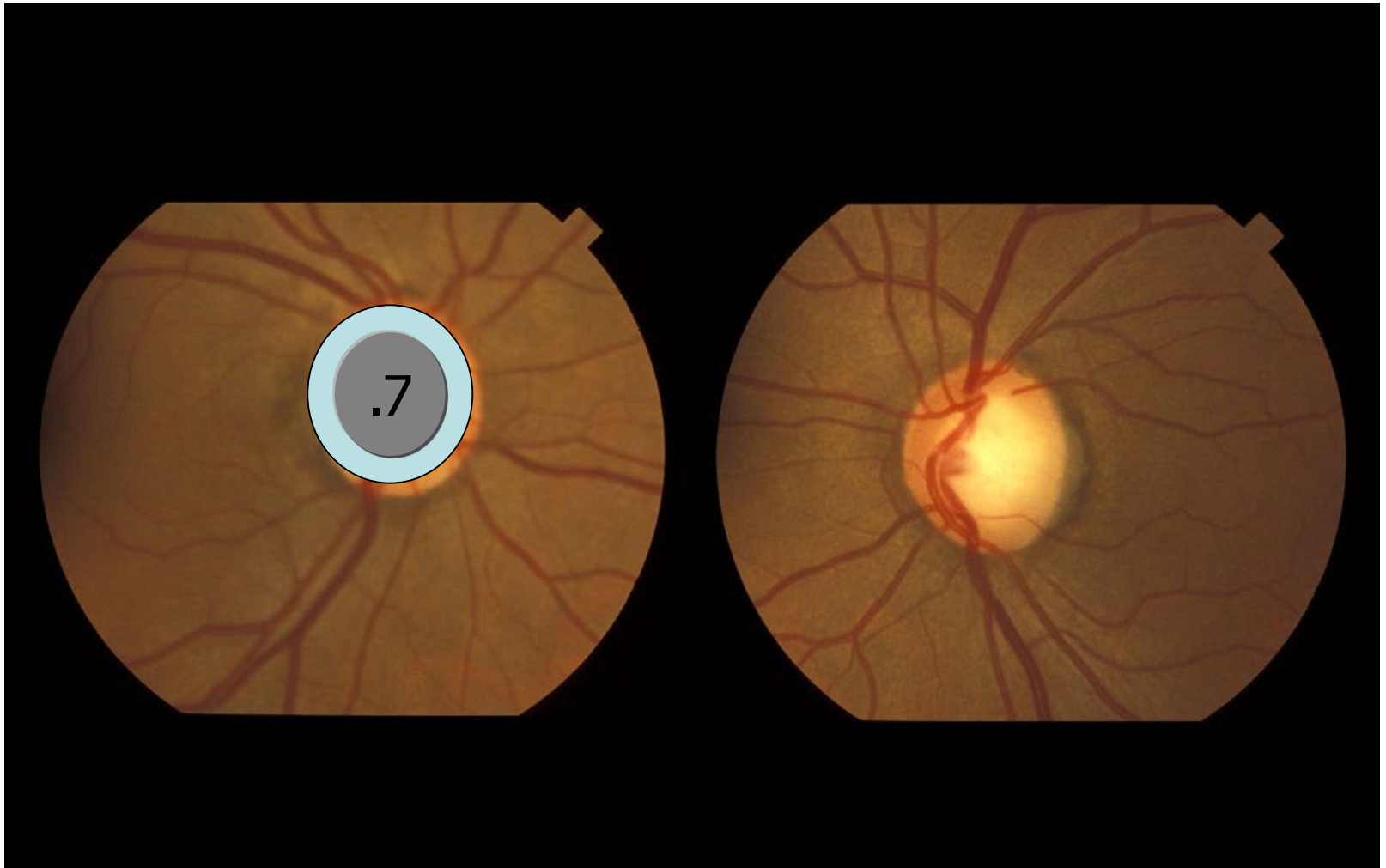


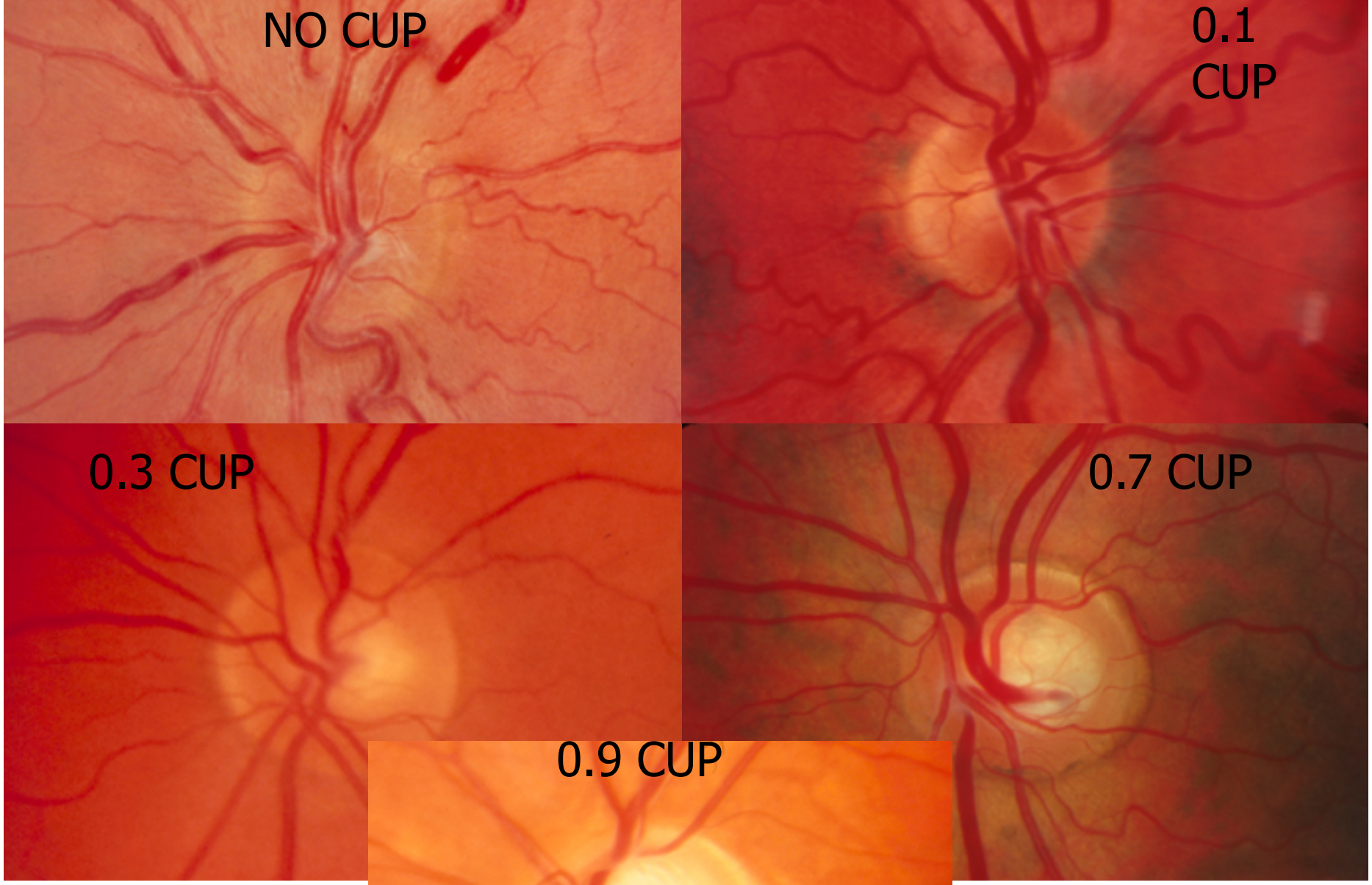
--Means Sieve
--Anatomically present in all discs
--Visible in about 1/3
--Shallow in myopia

Look at the Cup-to-disc ratio:

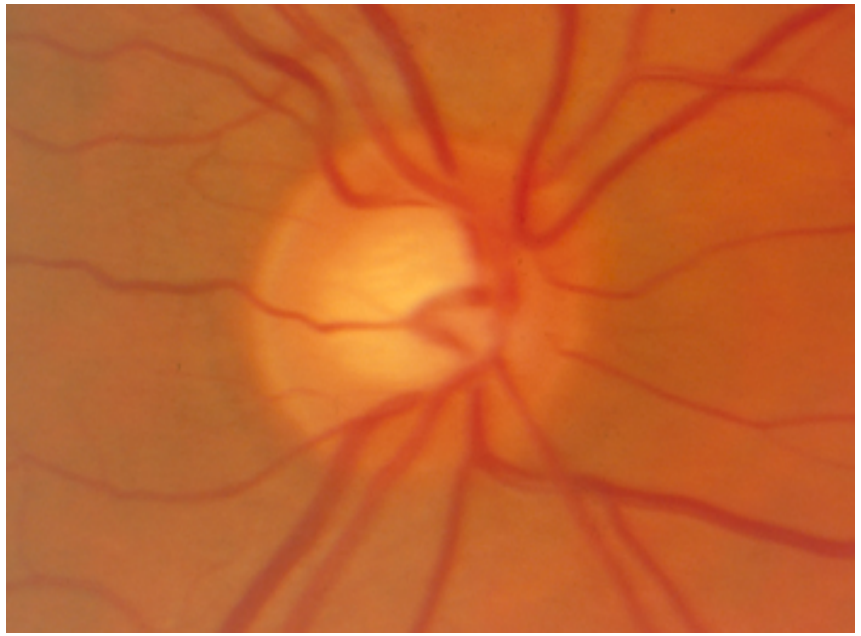


WHAT IS THE CUP-TO-DISC RATIO?

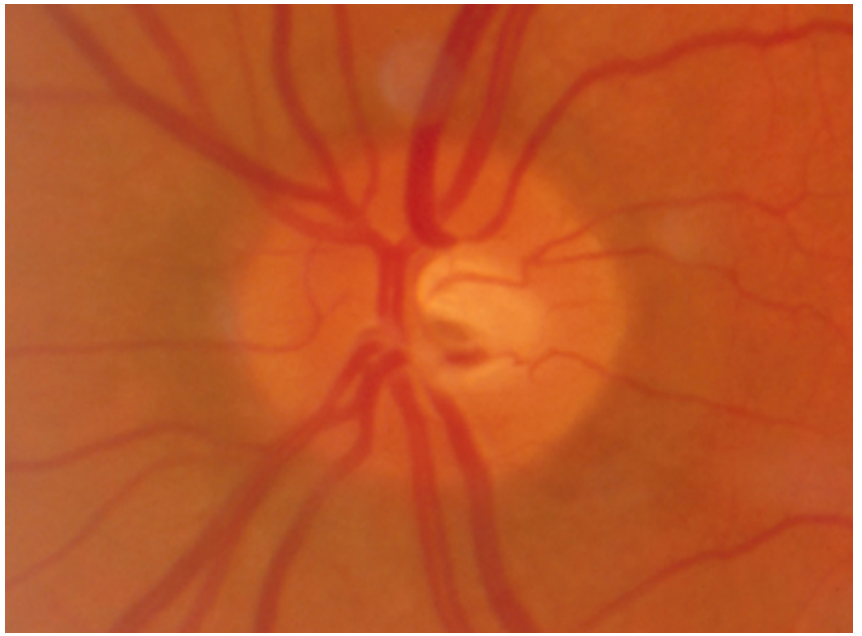



NO CUP
0.1
CUP
0.3 CUP
0.7 CUP
0.9 CUP

What is the cup to disc ratio?

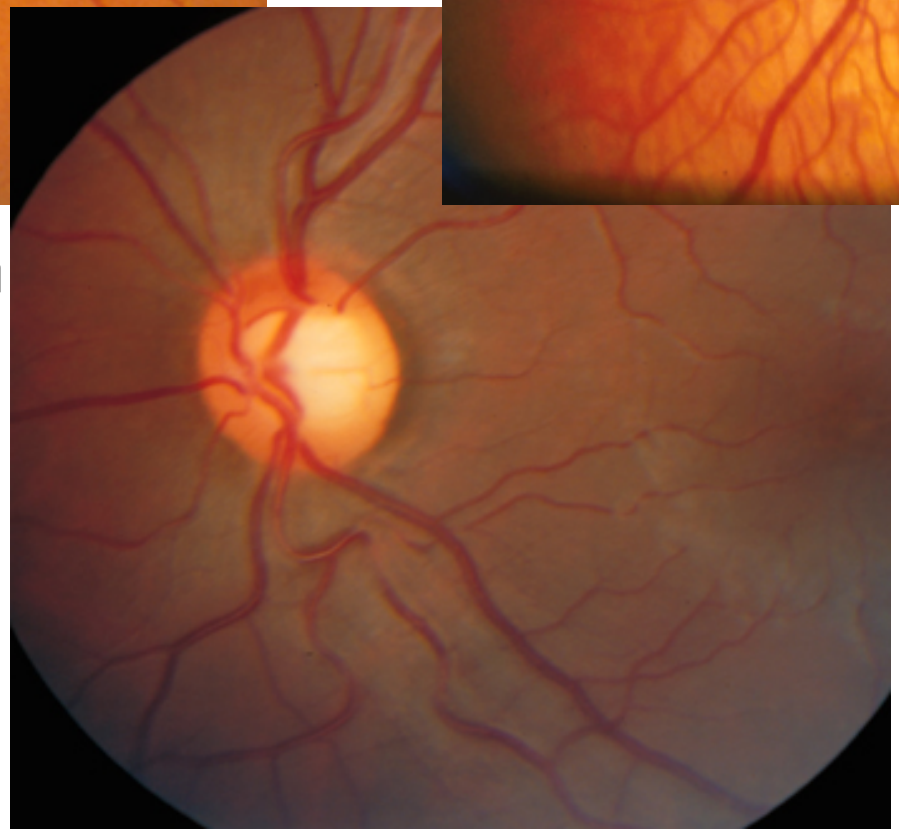


0.6



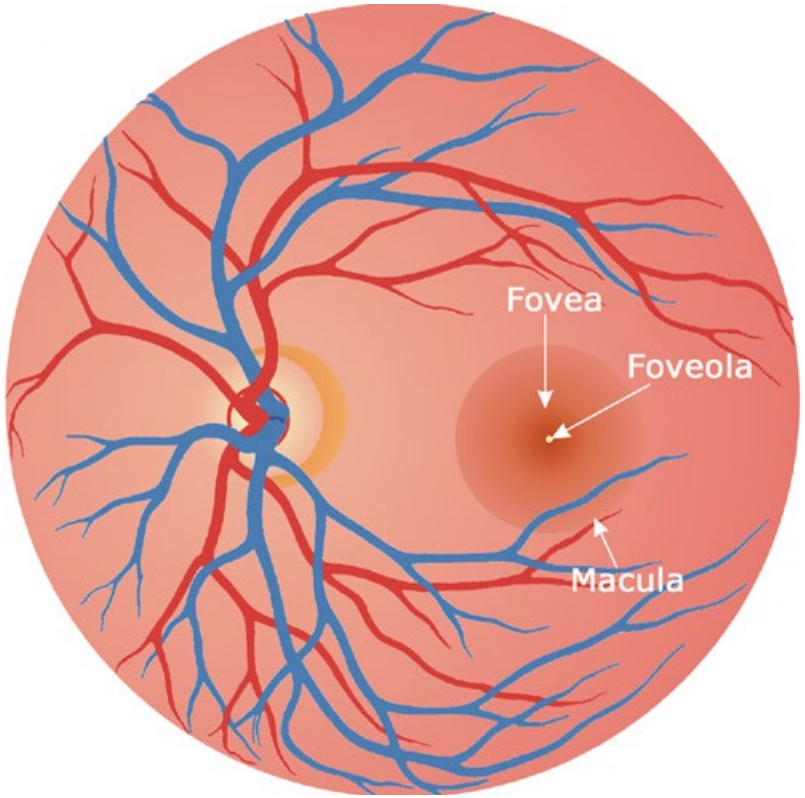
0.3

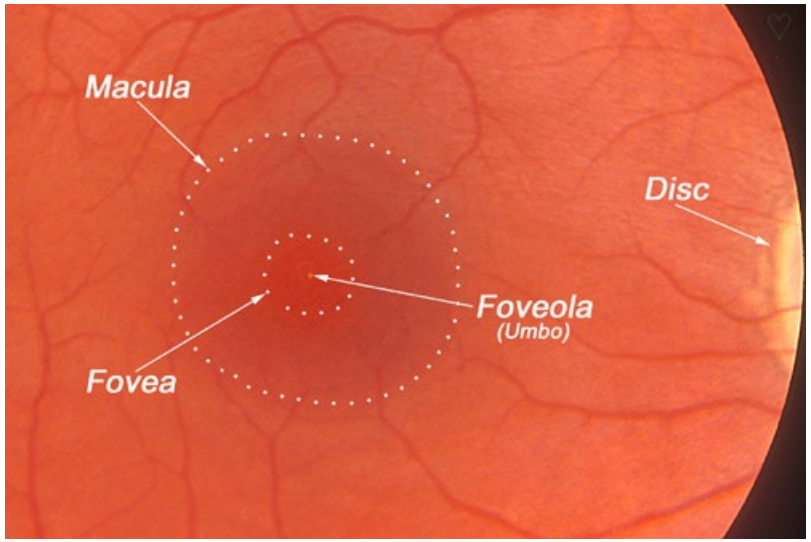
THE **COLOR** OF THE RETINA

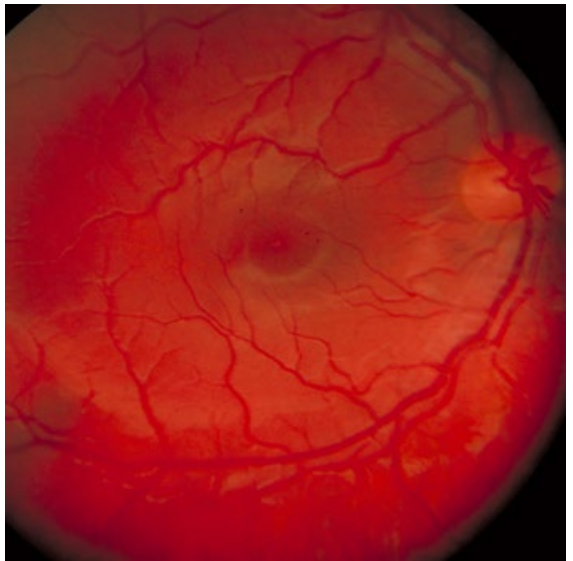


The color of the retina is determined by the choroid and RPE-- and the amount of melanin individuals have

VIEW THE MACULA



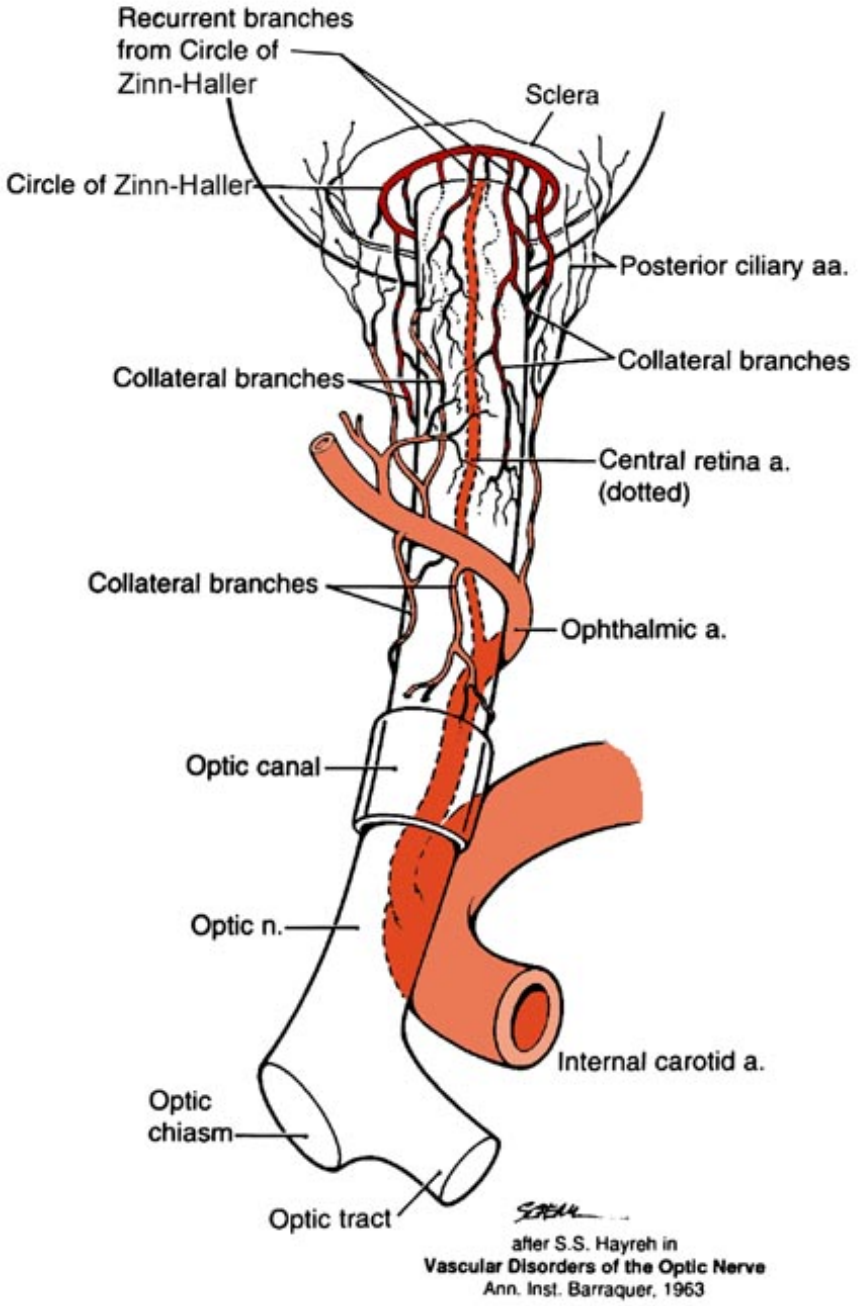




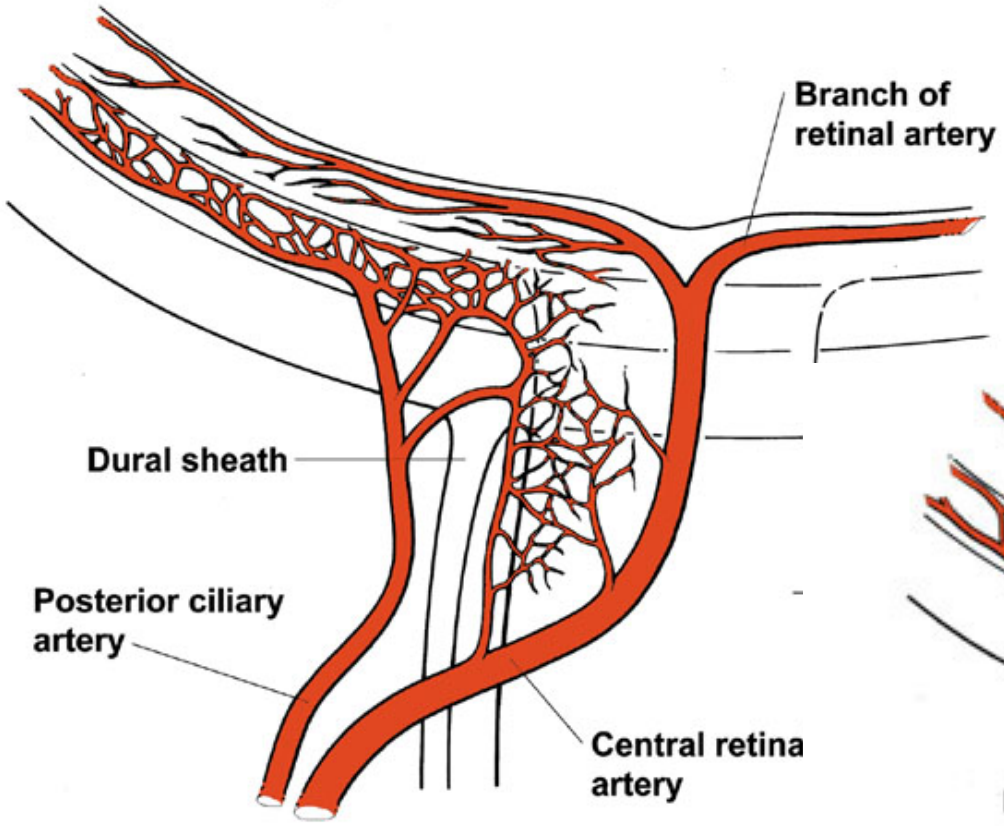
VASCULAR SUPPLY TO THE GLOBE AND DISC

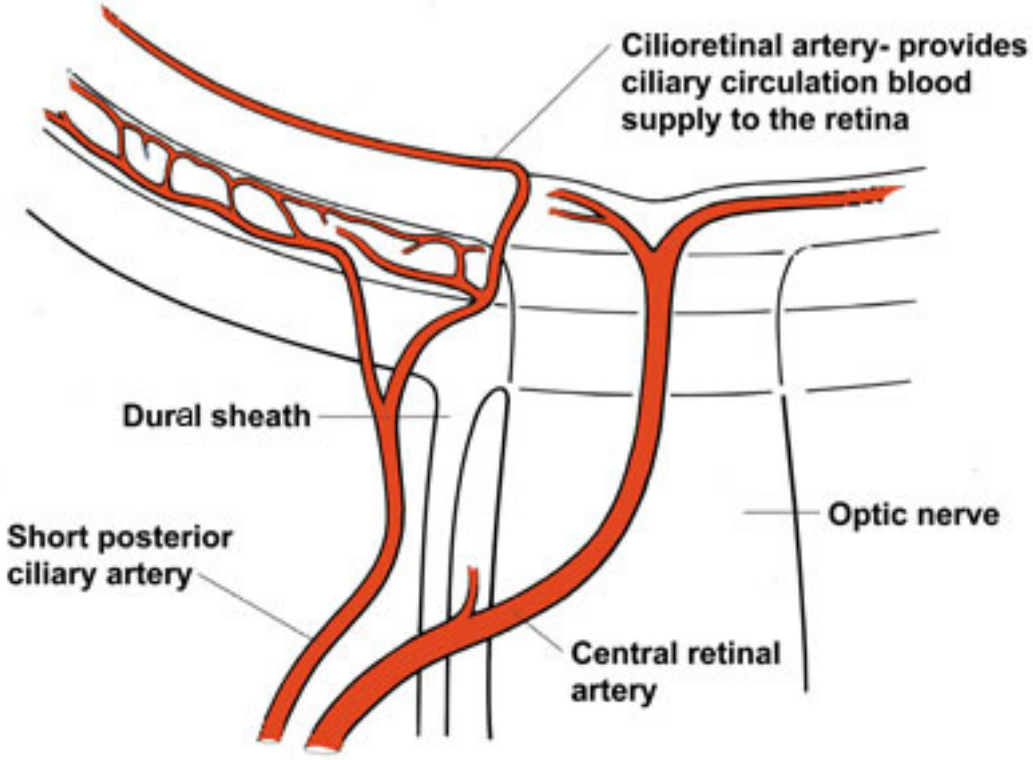
TWO MAJOR SOURCES by way of the ophthalmic artery+

- Posterior Ciliary arteries
- Central retinal artery



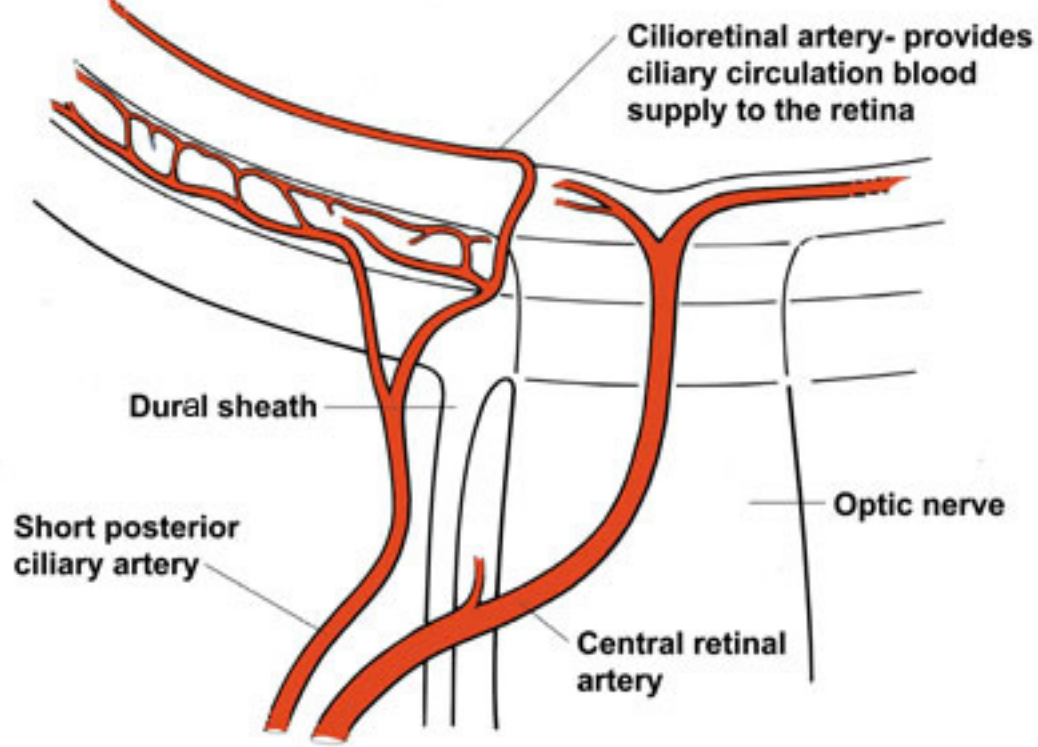
BLOOD SUPPLY TO THE DISC
is from the posterior ciliary arteries





The posterior ciliary arteries supply the disc, the choroid and the retinal pigment epithelium

CILIORETINAL ARTERY



- Present in about 32% of people
- Enters separate from the CRA
- Isolated occlusion = Temporal arteritis
- Spared in CRAO

A TOUR OF THE FUNDUS AND VENOUS PULSATIONS

TheTour.wmv
The_Tour.avi

Spontaneous_Venous_Pulse.wmv
Spontaneous_Venous_Pulse.avi