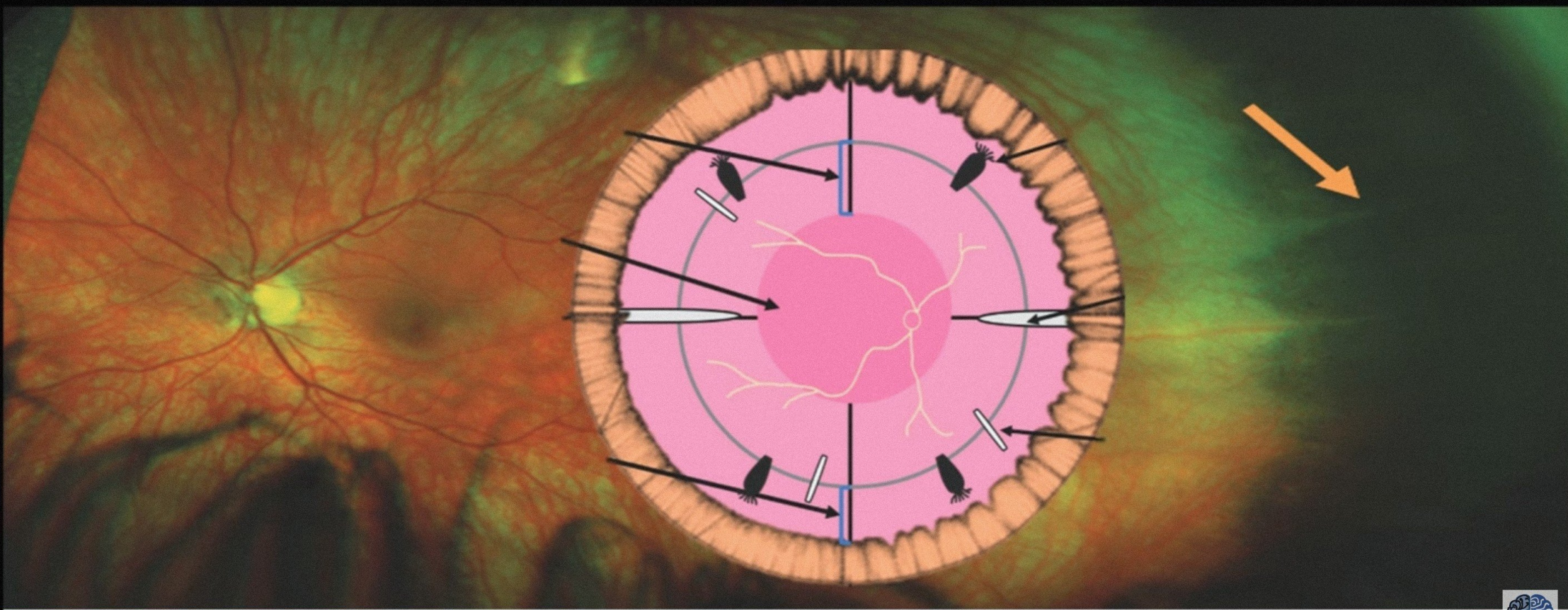
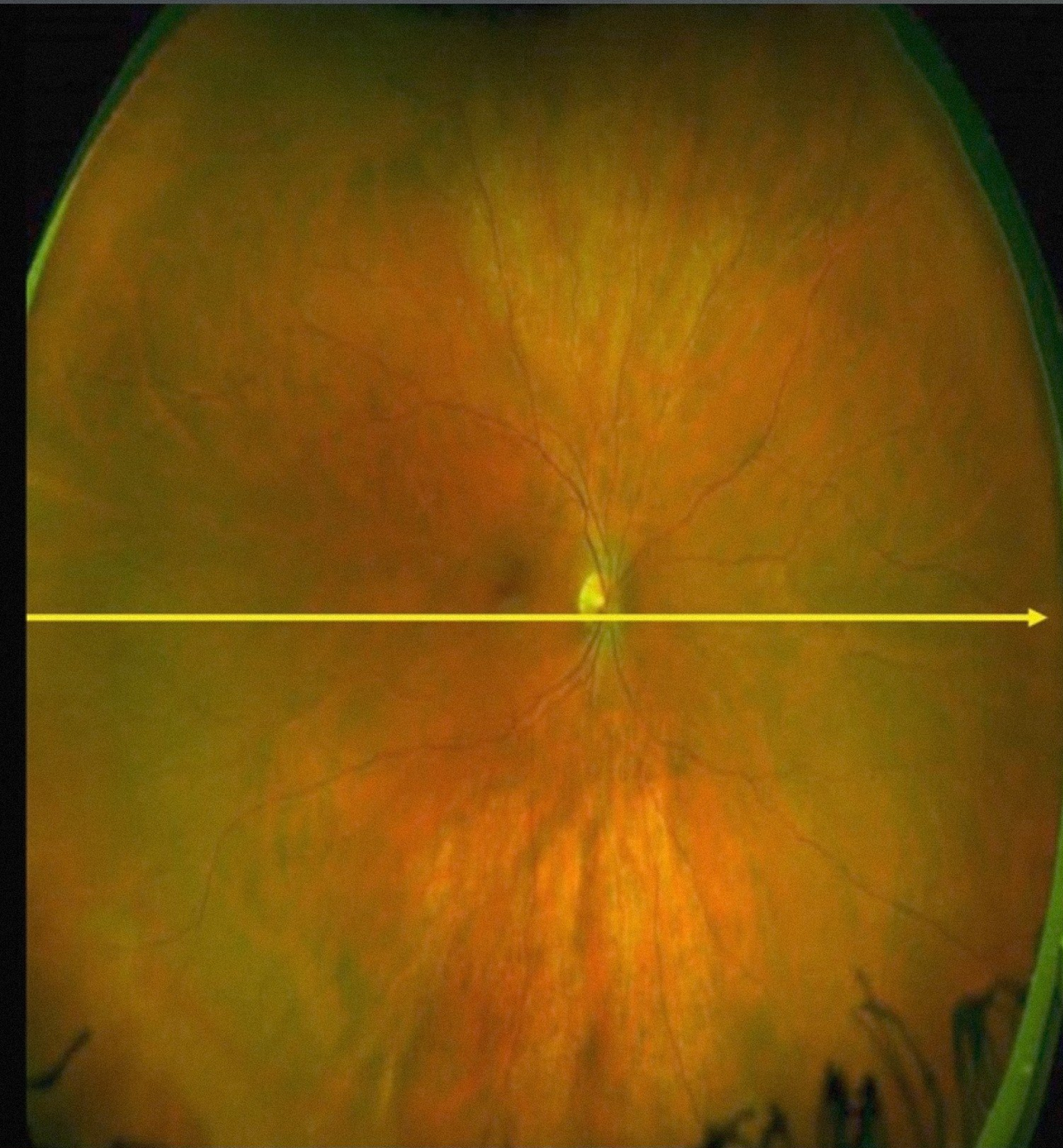


# RETINAL TOPOGRAPHY



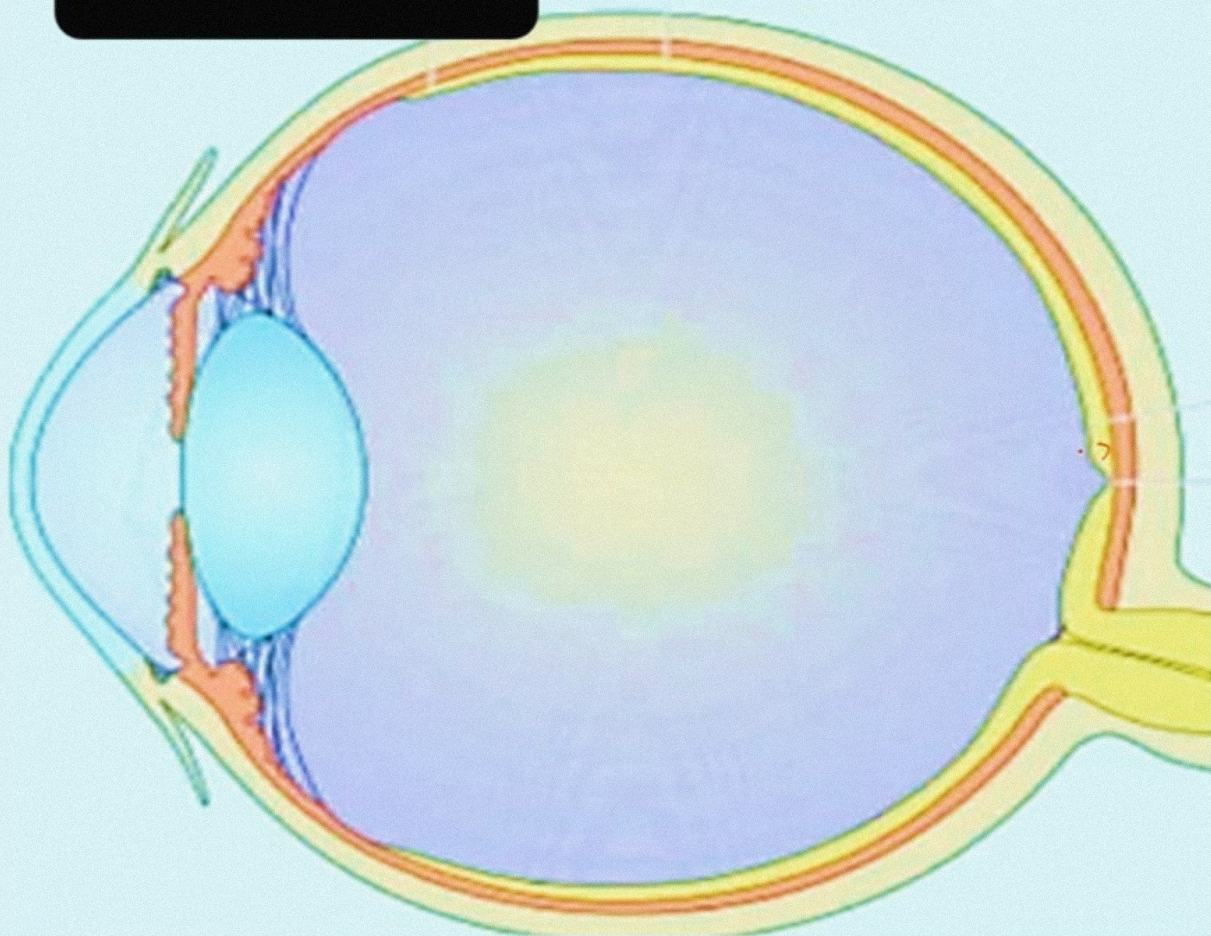


- Human retina measures **32** mm from ora to ora along the horizontal meridian.
- Total surface area of the retina in each eye is **1100mm<sup>2</sup>**
- Avg thickness of retina is **200 micrometers.**
- It slightly thicker near the optic nerve head and macula
- Gradually thins out at the ora serrata and fovea



Ora serrata : 120 microns

Equator : 180 microns



Fovea : 230 microns

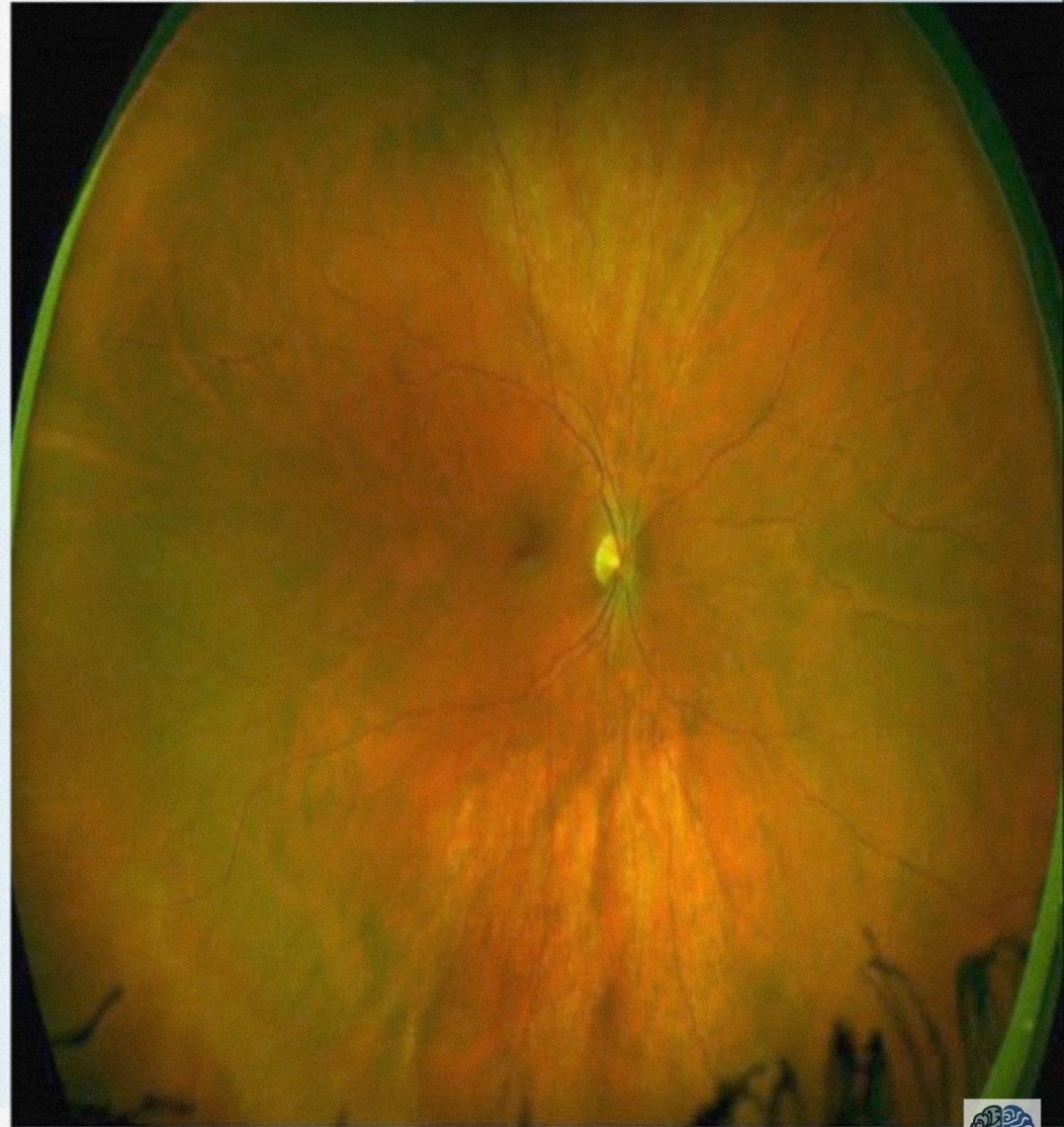
Foveola : 100 microns

Optic disc : 560 microns



# TOPOGRAPHY

- Macula lutea
- Fovea
- Foveola
- EXTRA-AREAL retina
- Near/mid/far periphery
- Ora serrata
- Some abnormal findings in periphery

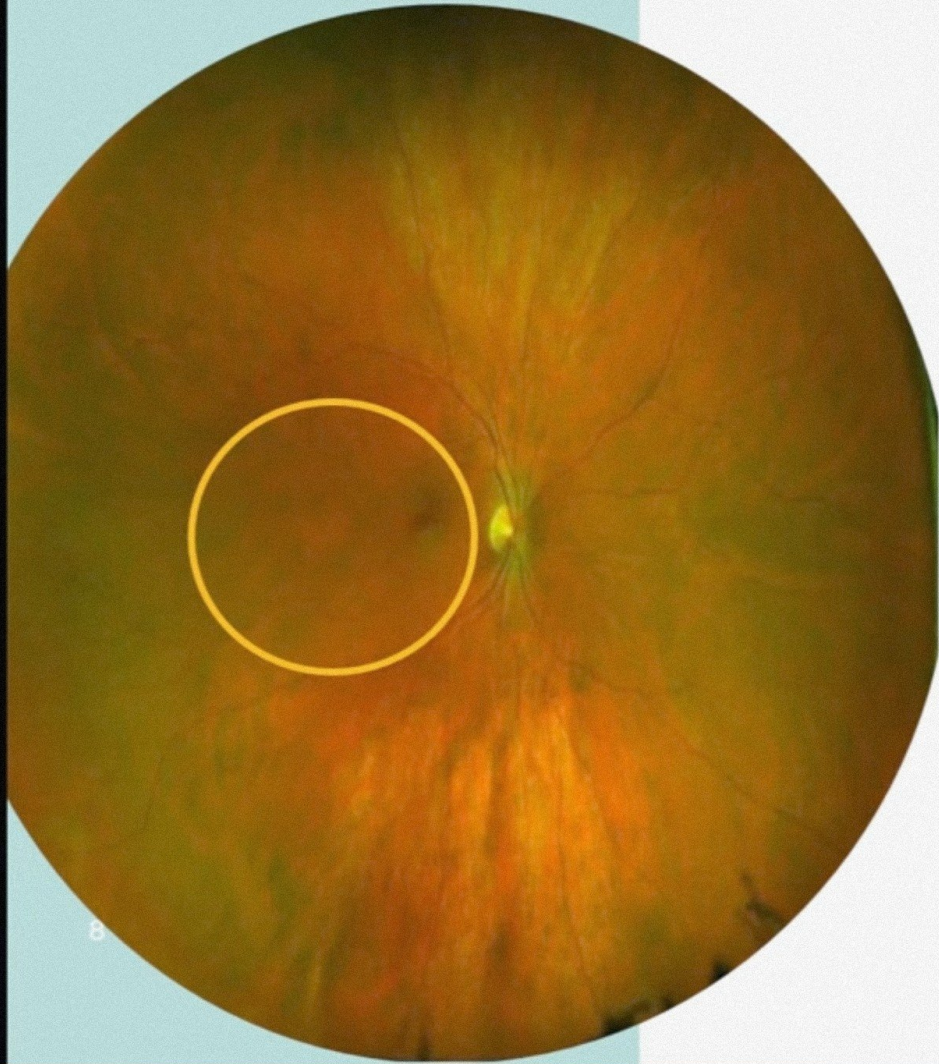


# MACULA LUTEA



- Also known as the central retina and **area centralis**
- 5-6mm diameter circular zone of retina
- Between the superior and inferior temporal arteries and optic nerve head

# IMPORTANT POINT



- Cone dominated region.
- Histologically characterized by presence of 2 or more layers of ganglion cell bodies





## MACULA LUTEA

- **Oxygenated carotenoids**, in particular lutein and zeaxanthin, accumulate within the central macula and contribute to its yellow color.
- Act as short wavelength filter protecting against the UV radiation.



A fundus photograph of the retina, showing the optic disc on the right and the macula lutea in the center. A yellow circle is drawn around the macula lutea. The background is a warm, orange-brown color with visible retinal vessels.

# MACULA LUTEA

15 degrees of field of vision



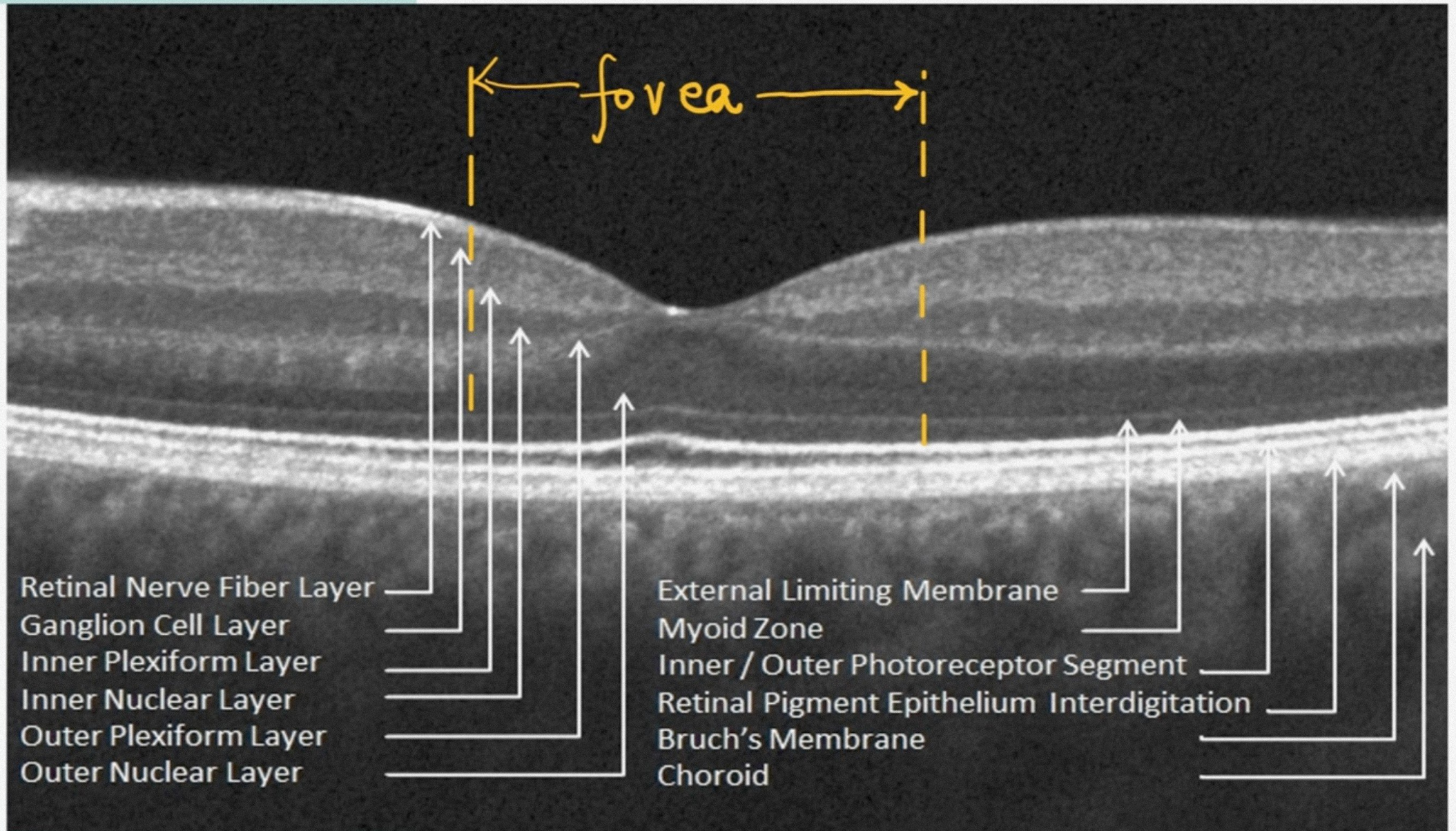


# FOVEA



- **1.5mm** diameter area in the area centralis.
- The photoreceptor layer of which consists entirely of **cones**
- Specialized for high spatial acuity and color vision.
- Has a margin, slope, and floor,





← fovea →

Retinal Nerve Fiber Layer  
Ganglion Cell Layer  
Inner Plexiform Layer  
Inner Nuclear Layer  
Outer Plexiform Layer  
Outer Nuclear Layer

External Limiting Membrane  
Myoid Zone  
Inner / Outer Photoreceptor Segment  
Retinal Pigment Epithelium Interdigitation  
Bruch's Membrane  
Choroid



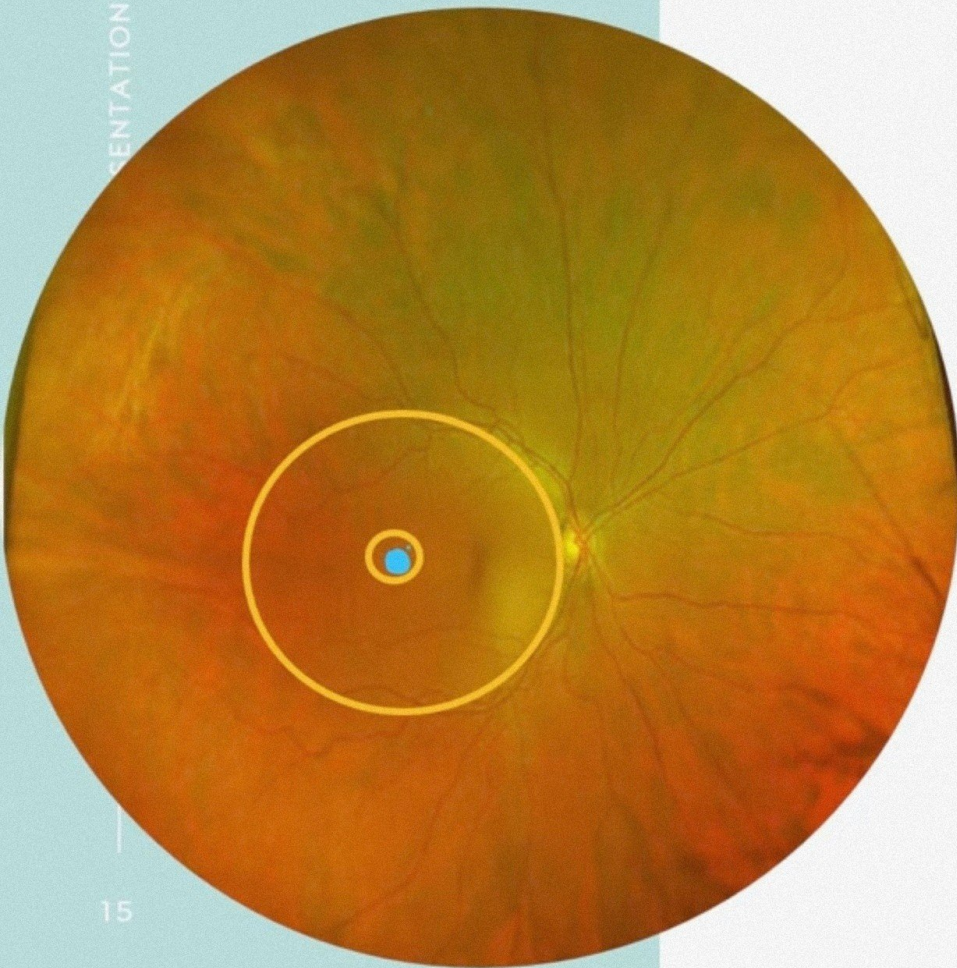
- One DD
- 1.5mm
- 5 degrees



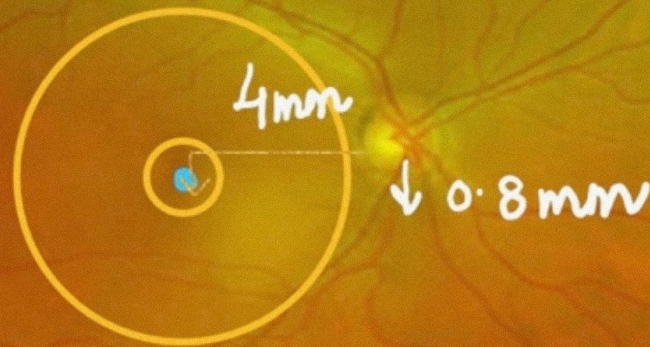
# FOVEOLA

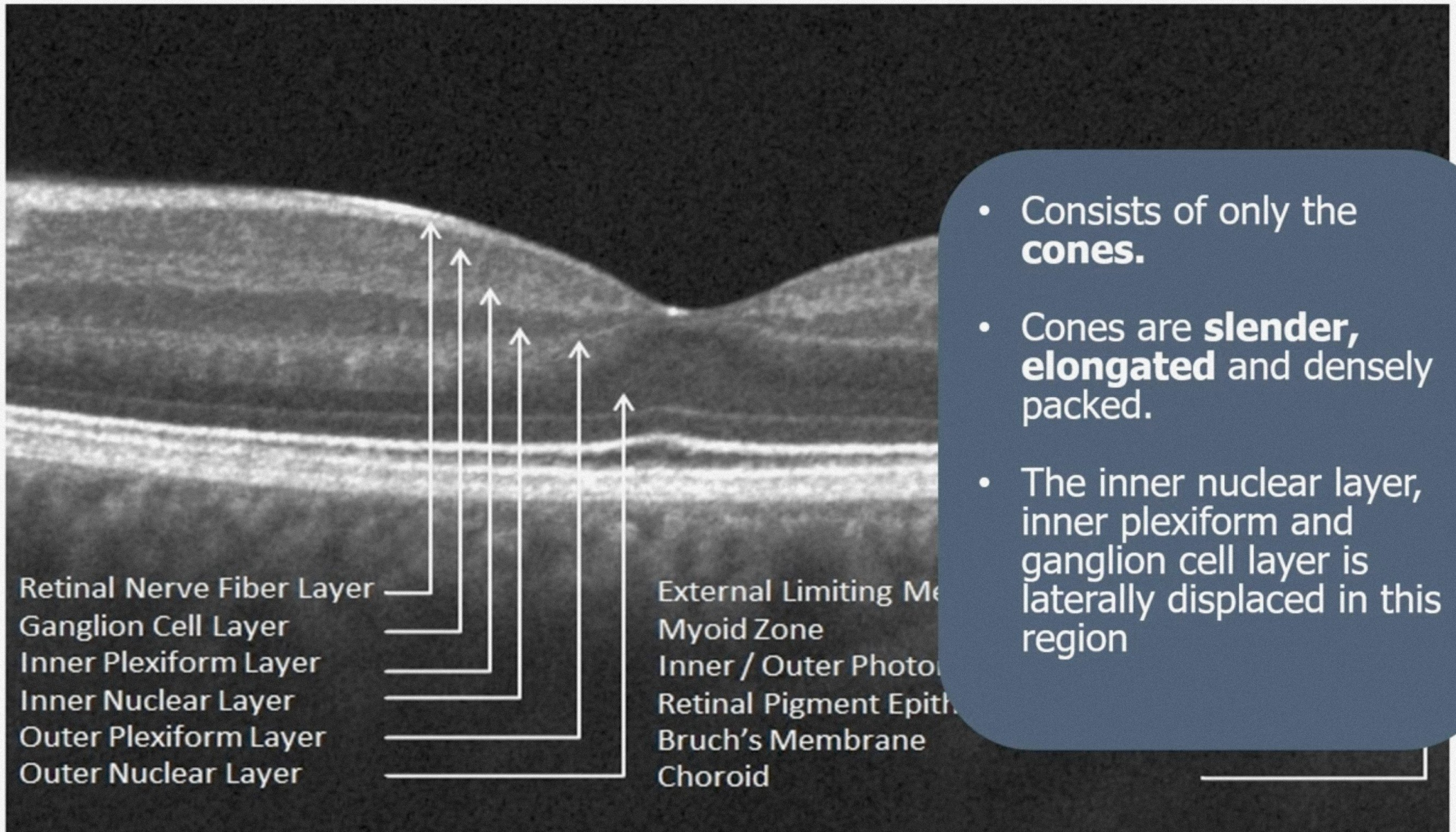
→ Floor of the fovea

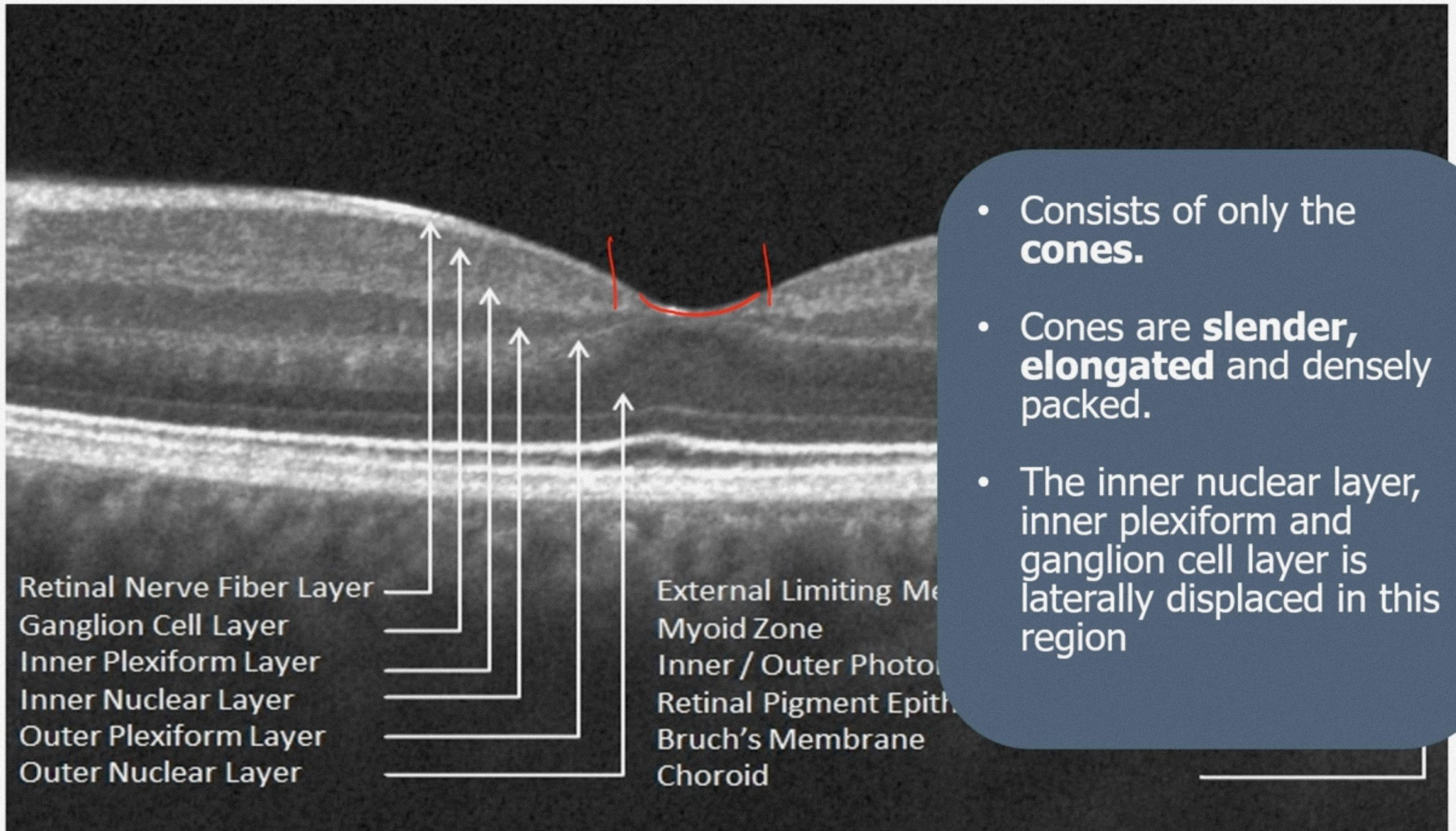
- 0.35 mm diameter area within the fovea
- FOVEOLA IS SMALLER THAN FOVEAL AVASCULAR ZONE
- It is avascular and relies on choriocapillaris for its blood supply

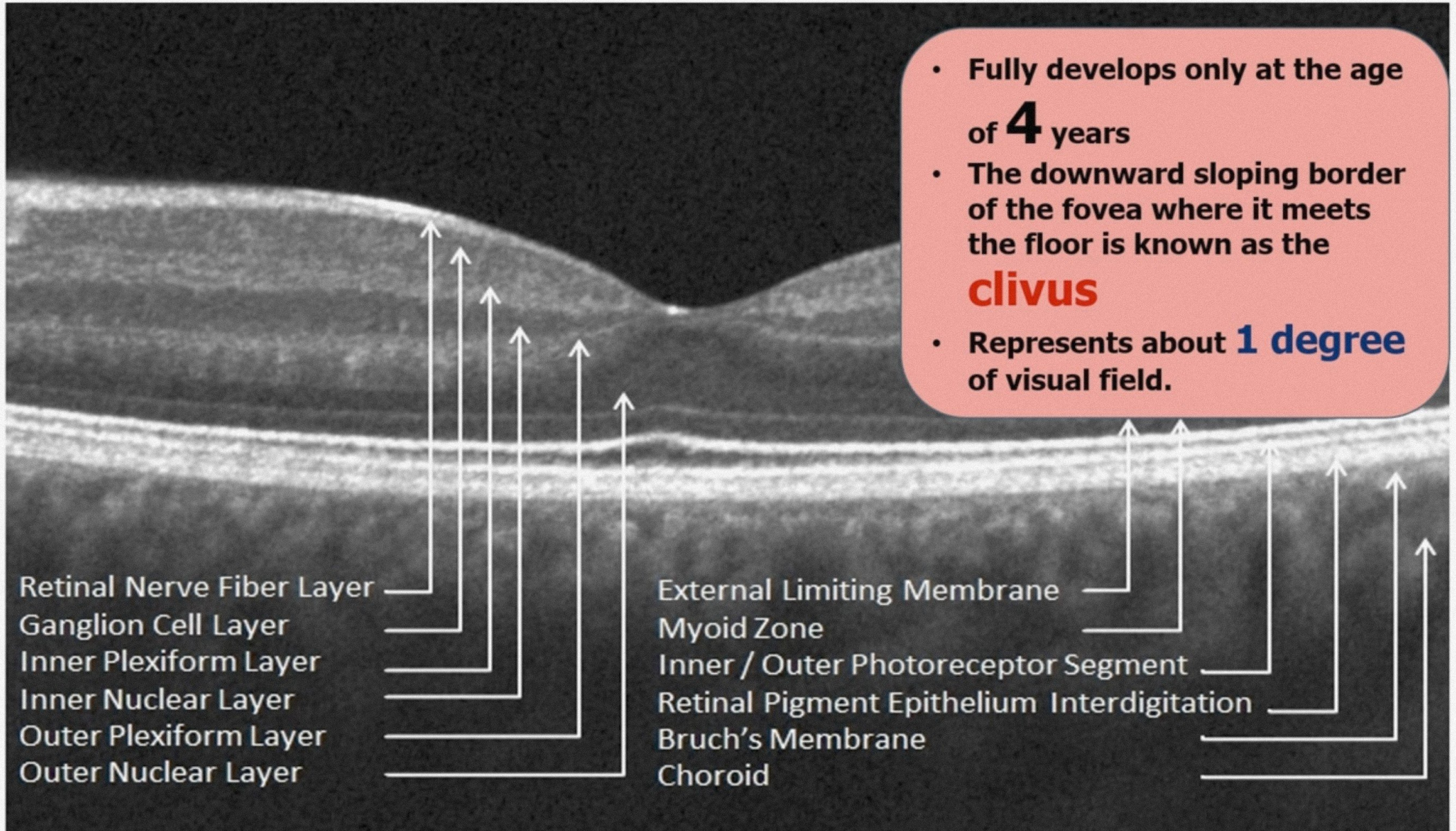


- 4mm temporal to disc
- 0.8mm inferior to disc

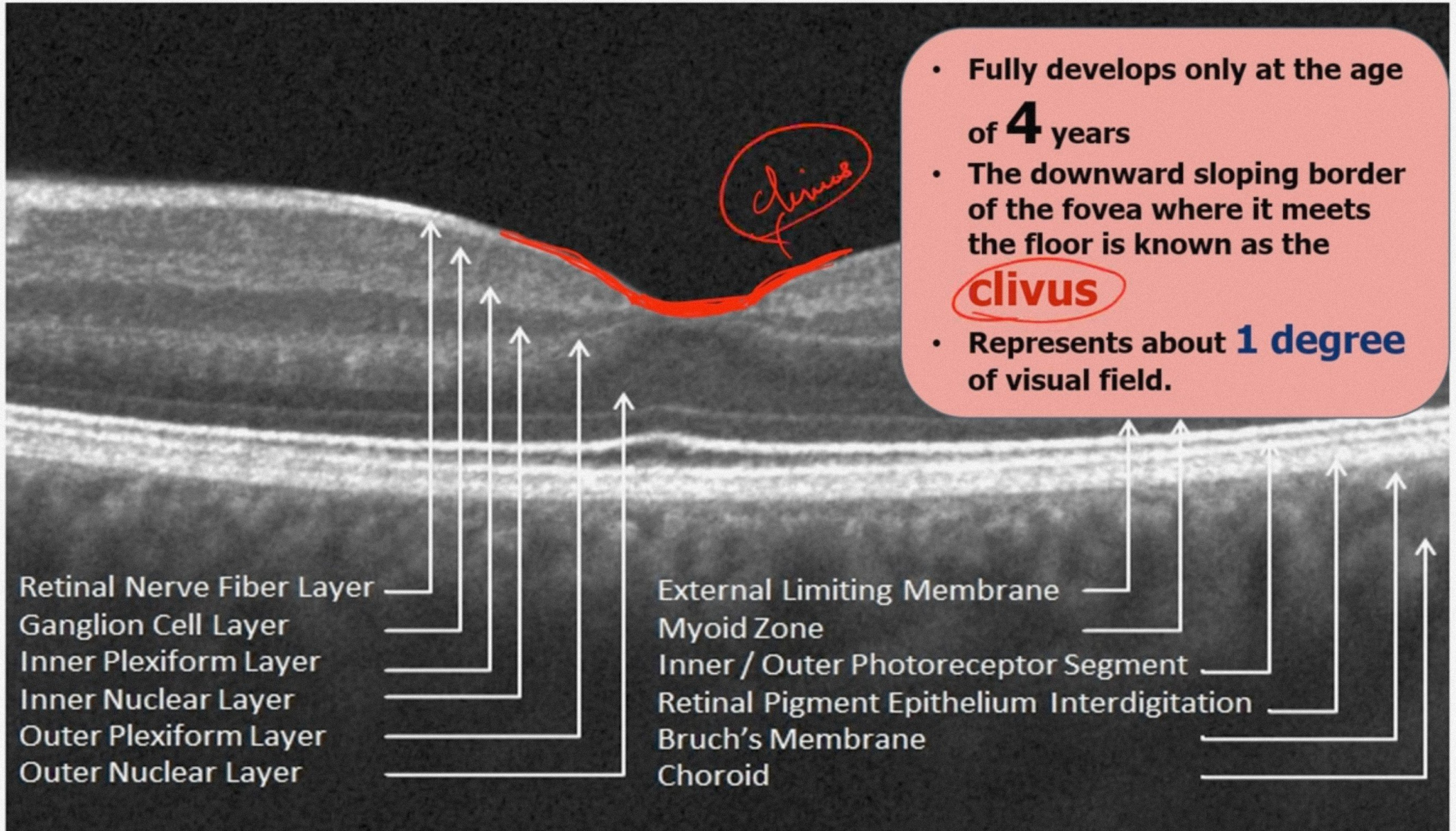






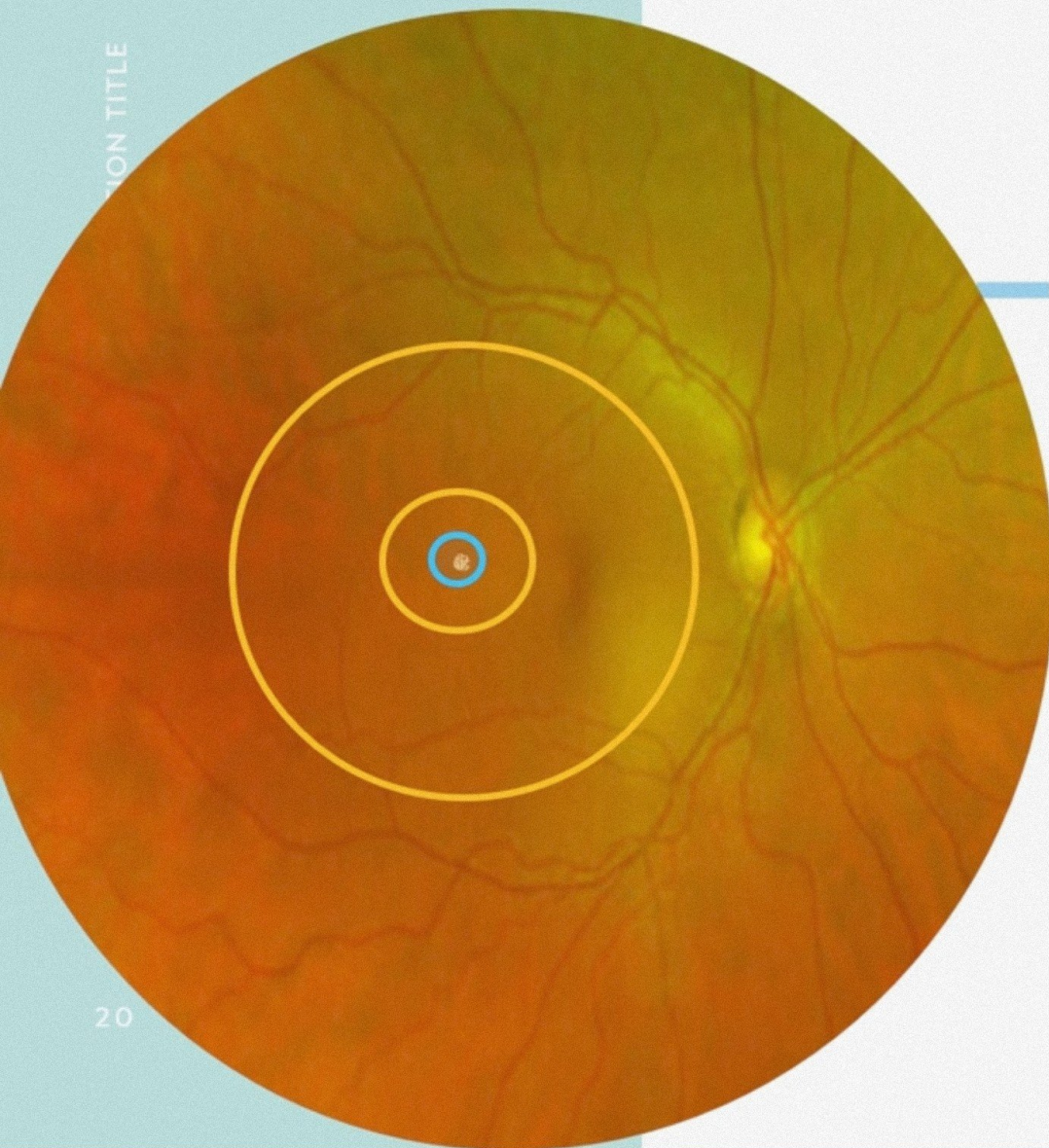






<b>Macula</b>	<b>Fovea</b>	<b>Foveola</b>
<p>Diameter: 5.5mm</p> <p>Represents 15<sup>0</sup> of the visual field</p>	<p>Diameter: 1.5mm</p> <p>Thickness: 0.25mm</p> <p>Represents 5<sup>0</sup> of the visual field</p>	<p>Diameter: 0.35 mm</p> <p>Thickness: 0.13 mm</p> <p>Represents 1<sup>0</sup> of the visual field</p>



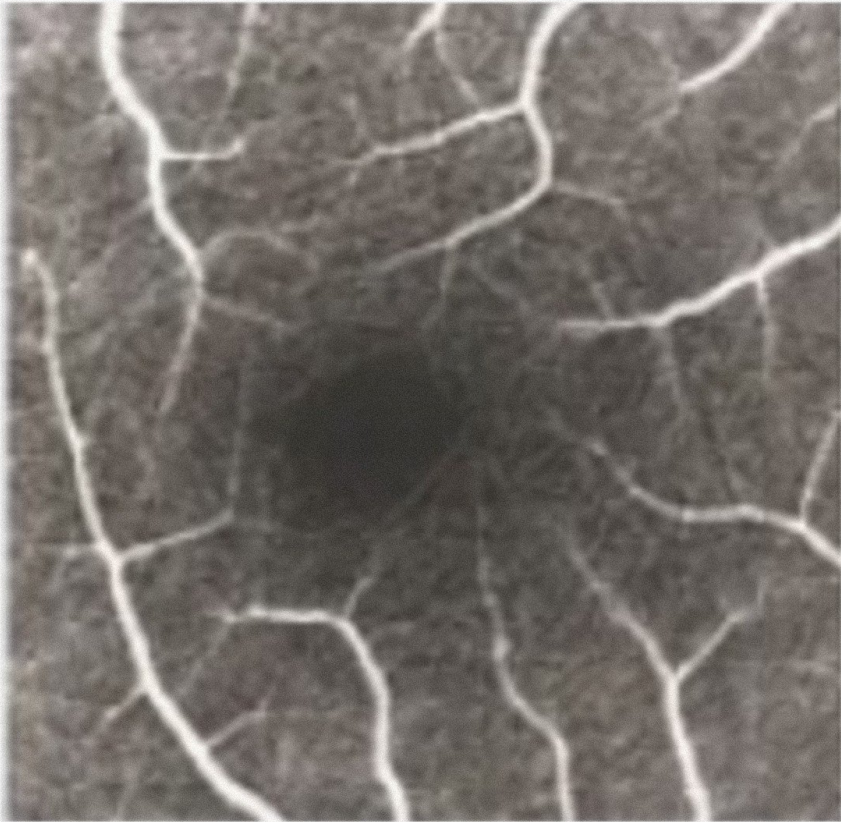


# UMBO

- Tiny depression within the centre of the foveola
- Seen ophthalmoscopically as a visible foveolar reflex
- Seen in every normal eye .



# WHAT IS FAZ ?



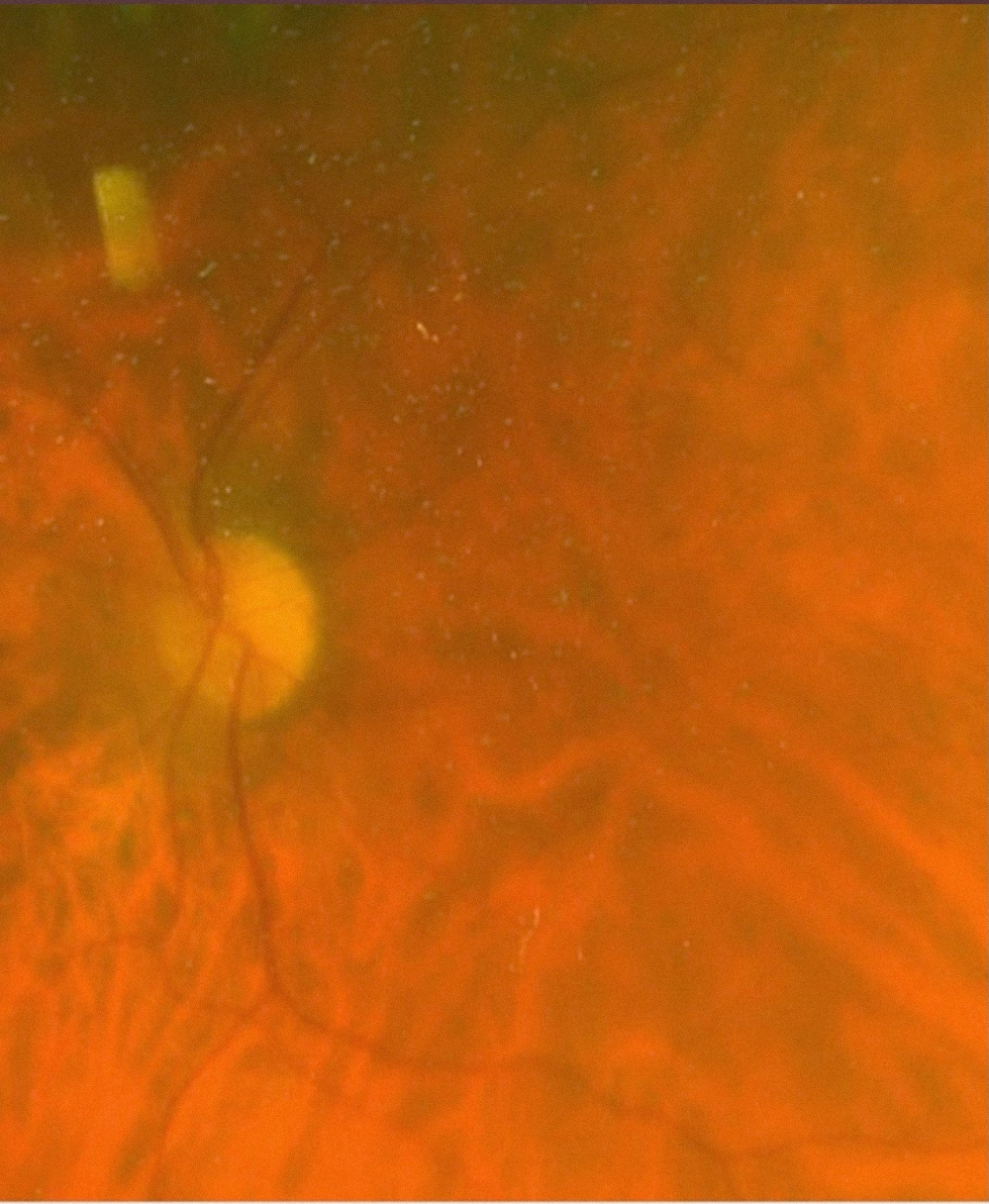
- Foveal Avascular Zone
- Within the fovea is a region devoid of retinal vessels, the **foveal avascular zone (FAZ)**.
- The diameter of the FAZ ranges from **250 to 600  $\mu\text{m}$  or greater**.
- Corresponds to central **1.5** degree of patients field .
- Between the fovea and foveola. 10

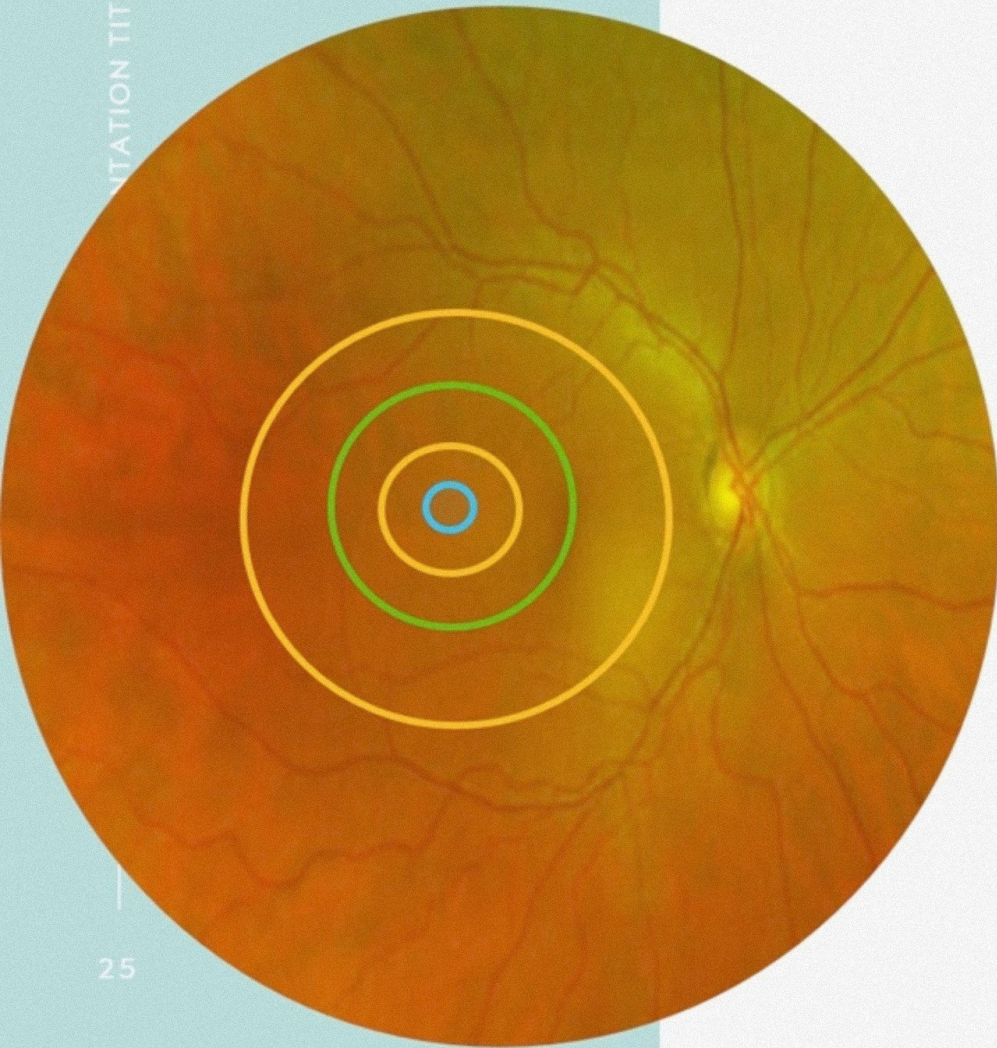


# CLINICAL NUGGET : FOVEAL HYPOPLASIA

Diagnostic test	Findings
Ophthalmoscopy	Absent foveal pigmentation and foveal reflex
Fluorescein angiography	Absence or decreased foveal avascular zone
Optical coherence tomography	Absence of foveal pit Persistence of inner retinal layers through the expected area of the fovea
Optical coherence tomography angiography	Absence of FAZ at the superficial capillary plexus Absence or decrease of FAZ at the deep capillary plexus





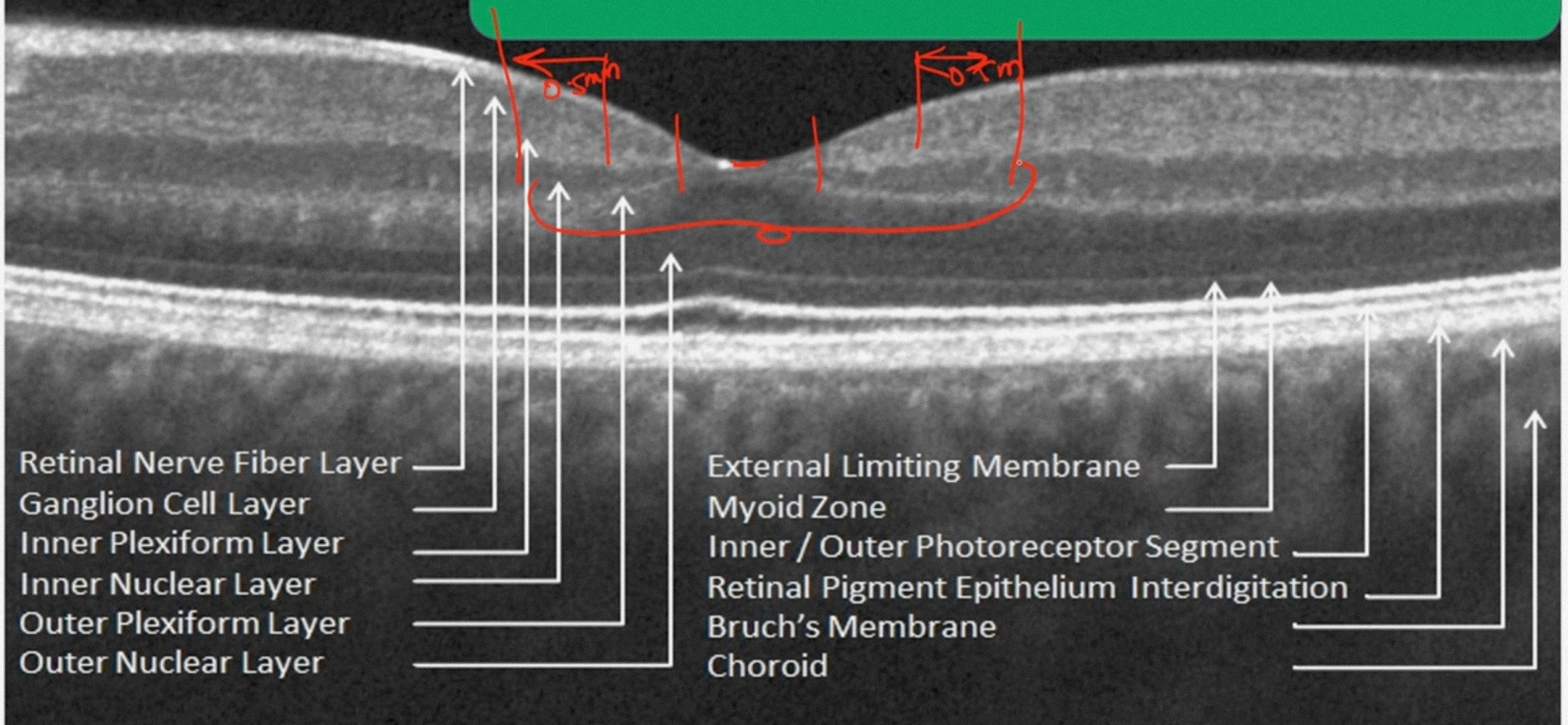


# PARAFOVEA

- Surrounding the fovea is the parafovea
- A **0.5- mm- wide ring** where the ganglion cell layer, inner nuclear layer, and outer plexiform layer (also known as Henle fiber layer) are thickest.

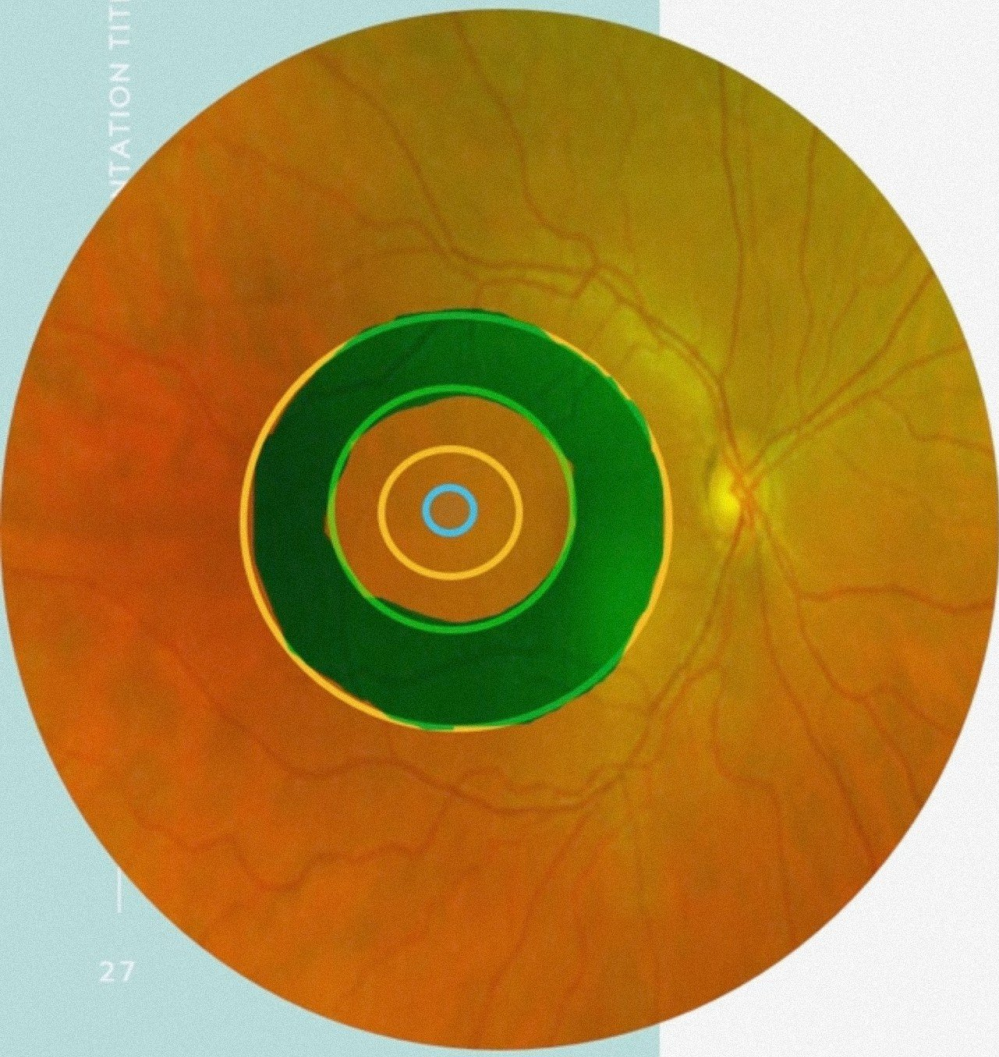


PARAFOVEA : The ganglion cell layer, inner nuclear layer, and outer plexiform layer (also known as Henle fiber layer) are thickest.



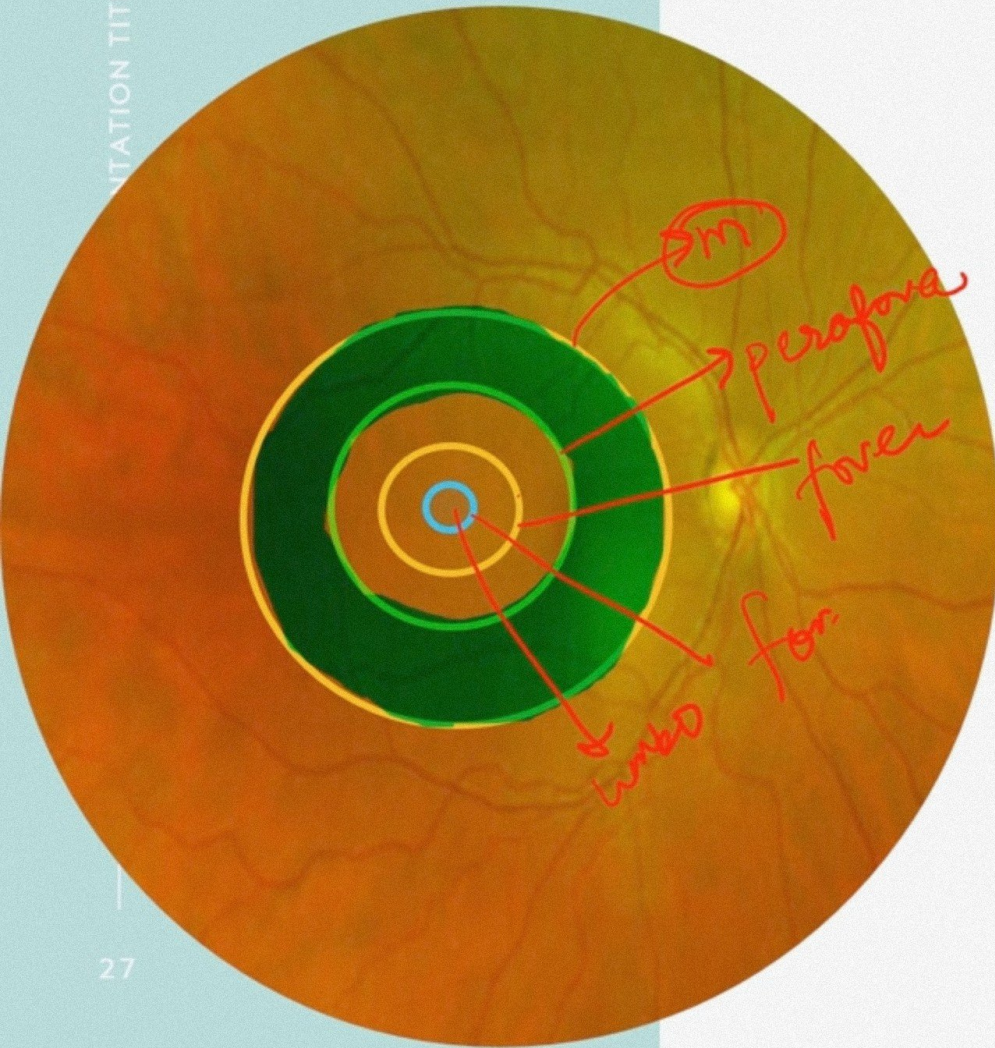


PRESENTATION TITLE



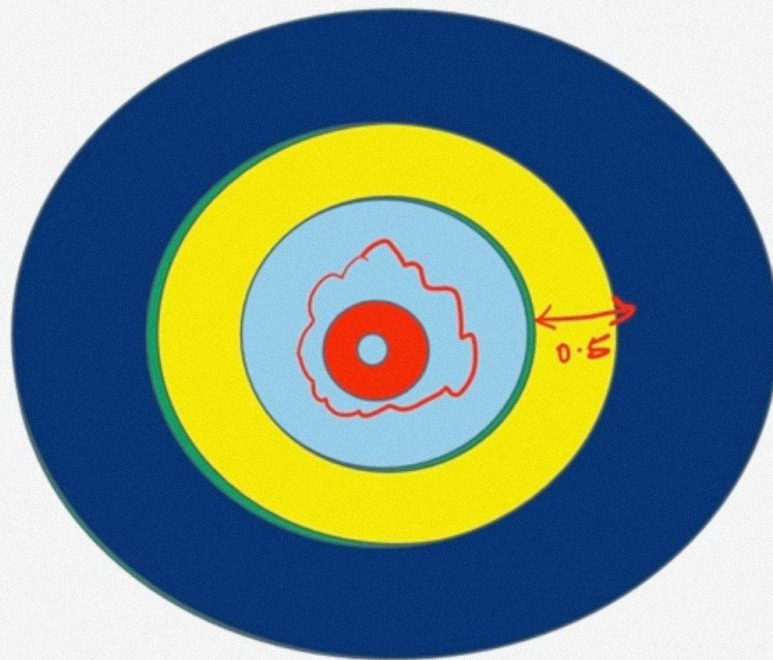
# PERIFOVEA





# PERIFOVEA

- Surrounding this zone is the perifovea, a ring approximately 1.5 mm wide.
- Thus, the umbo forms the center of the macula, and the periphery of the perifovea forms its margin



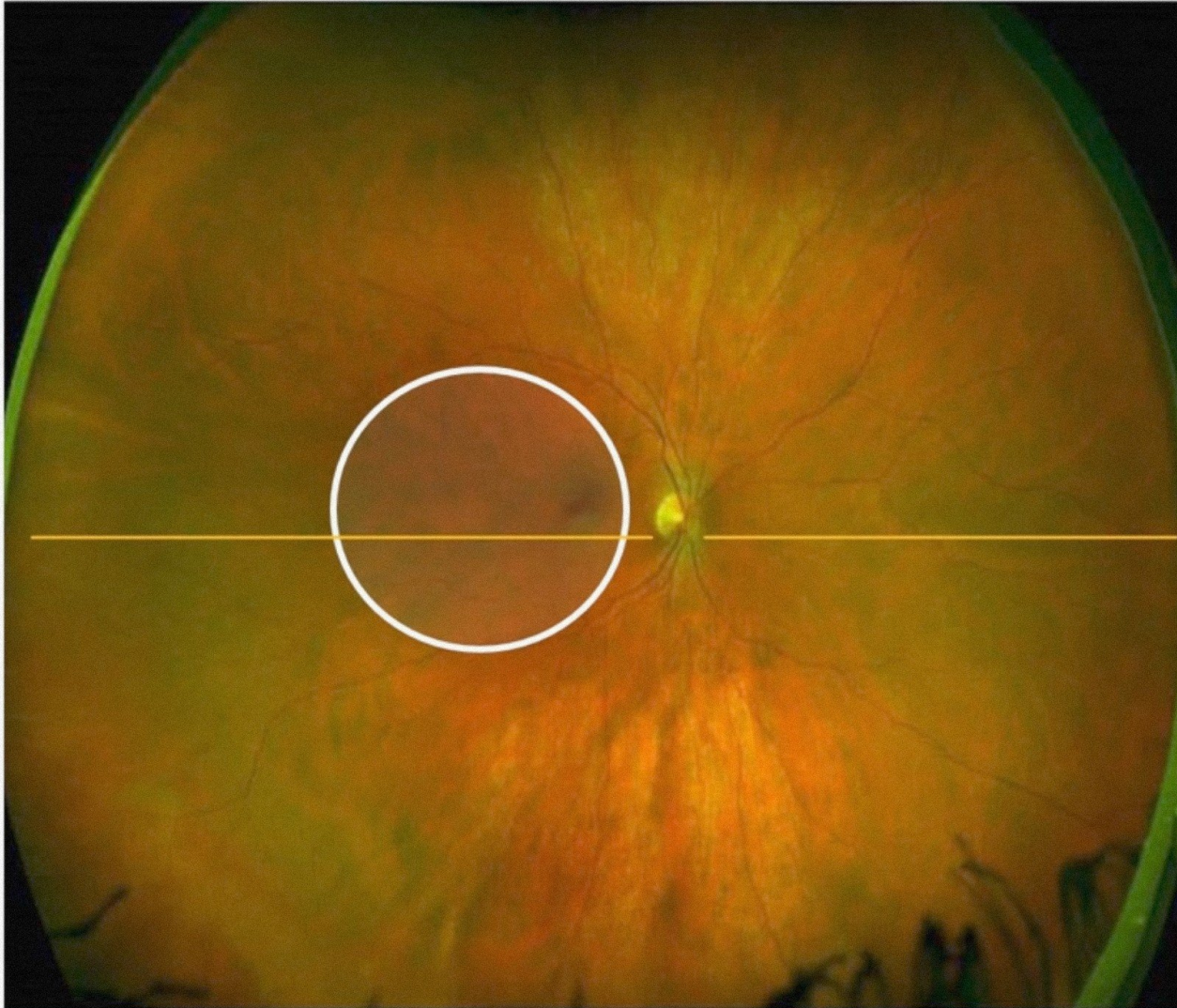
5.5 mm → macula  
1.5 mm (IDD) → fovea  
0.35 mm → foveola  
→ limbo

FAZ

parafovea  
perifovea



# PERIPHERY of RETINA

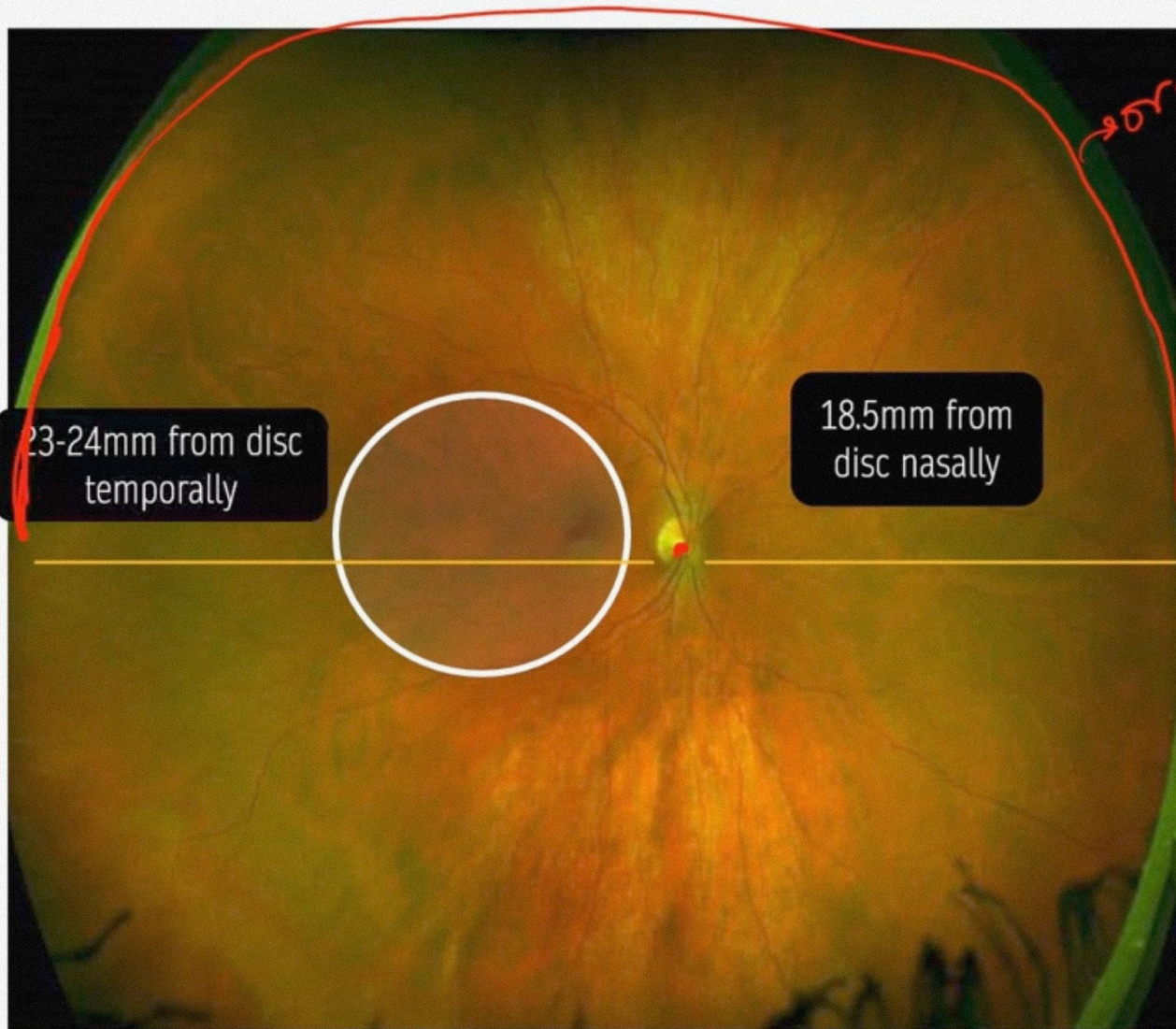


Retina outside the macular area is known as the **EXTRA-AREAL PERIPHERY**

- Rich in rods
- And has only one layer of ganglion cell bodies



# PERIPHERY OF RETINA

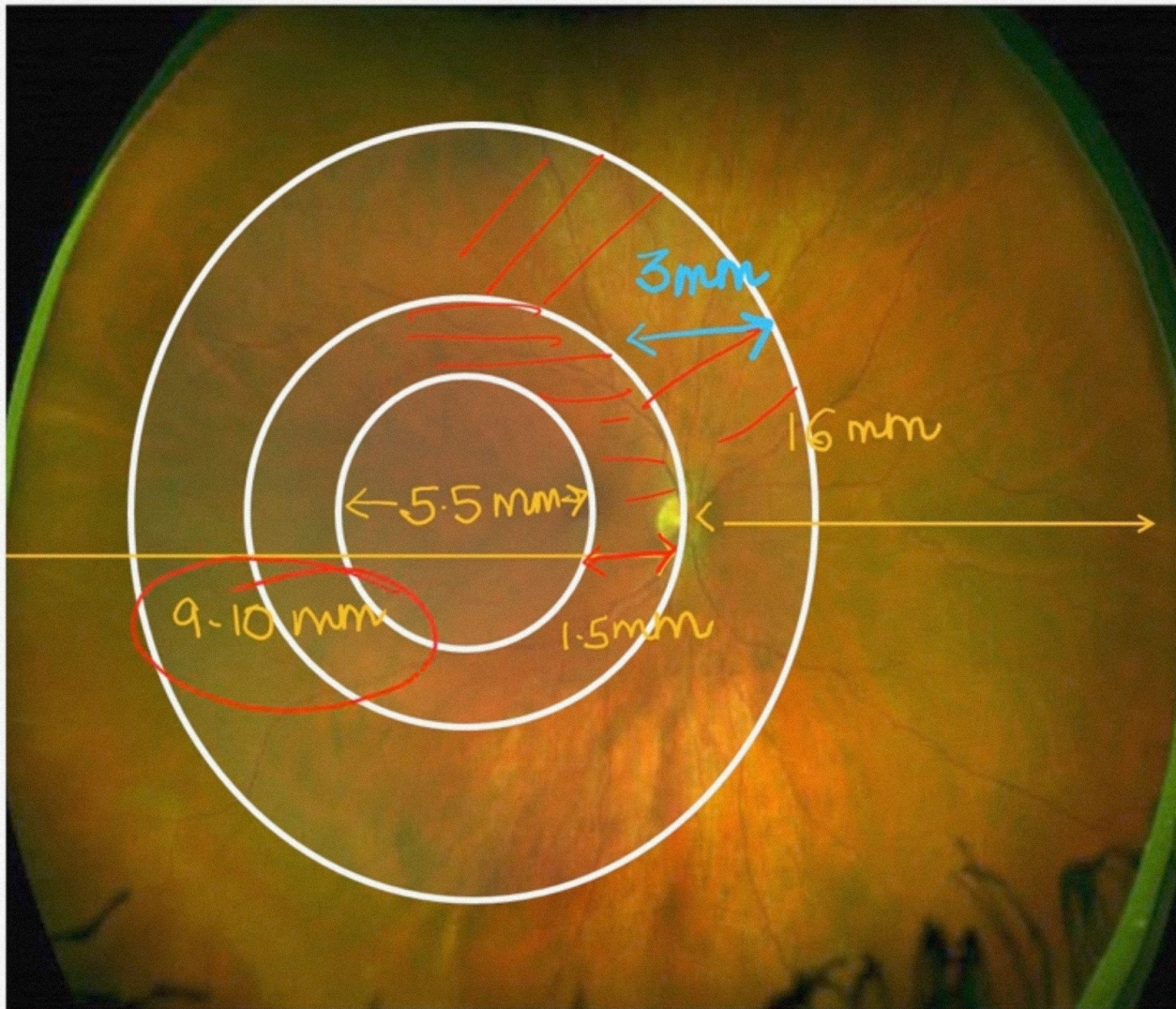


Retina outside the macular area is known as the **EXTRA-AREAL PERIPHERY**

- Rich in rods
- And has only one layer of ganglion cell bodies



# PERIPHERAL RETINA



- **Near Periphery** : 1.5mm around the macula

**Mid Periphery** : 3mm around the near periphery

- **Far Periphery** : 9-10mm from the optic disc on TEMPORAL SIDE
- 16mm from the optic disc on NASAL SIDE



## CLINICAL NUGGET



The ampullae of the vortex veins are **8–9** mm from the ora serrata and are visible by indirect ophthalmoscopy

Imaginary circle drawn at the vortex vein ampullas seen on indirect ophthalmoscopy is **EQUATOR**



# ANATOMICAL EQUATOR



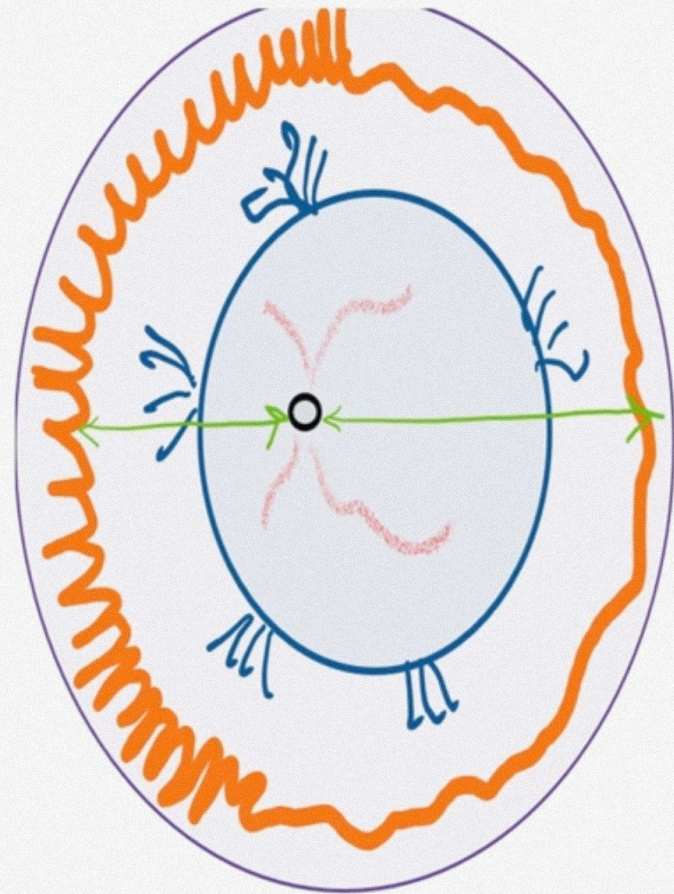
- Known as equatorial retina
- Retina posterior to it :-  
**PERIPHERAL RETINA.**
- Retina anterior to it is **FAR RETINA**

**14-15mm from  
the limbus**





# ORA SERRATA

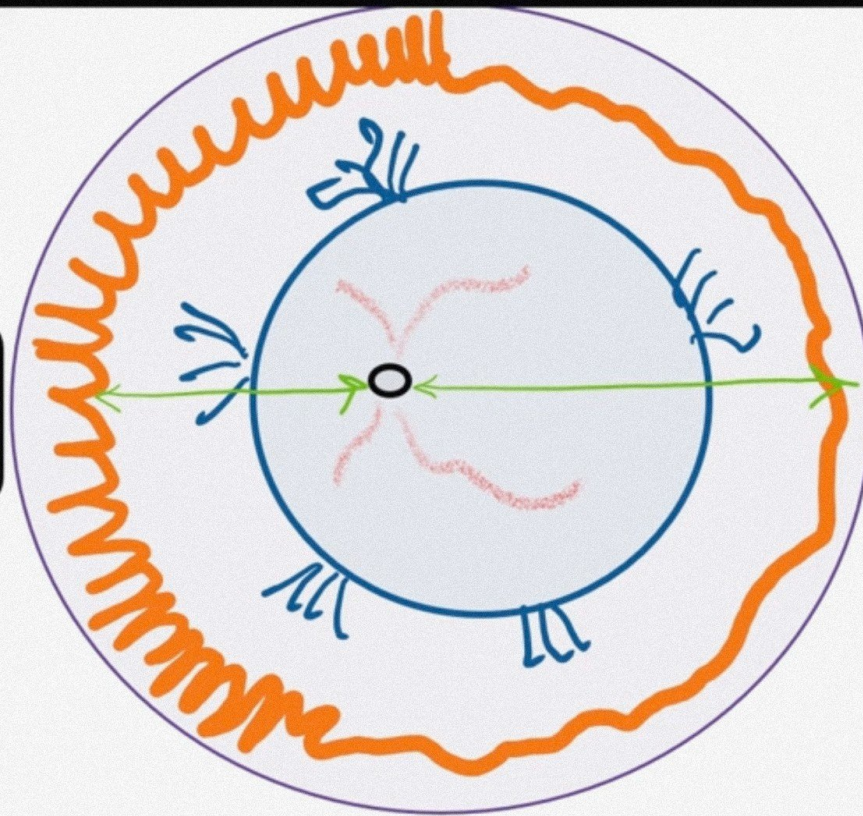


- The anterior limit of the retinal tissue
- Border between the **pars plana** and the retina.
- Neurosensory retina becomes continuous with the **columnar non pigmented epithelium** of the pars plana here.



Imaginary circle drawn at the ampullae of vortex vein representing the equator

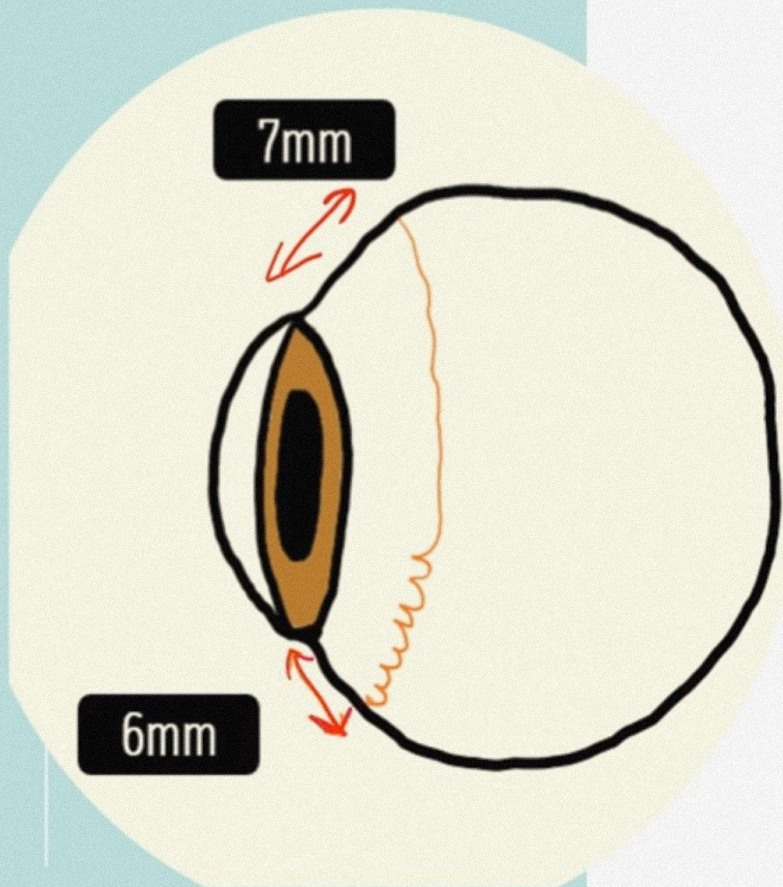
Optic disc to ora serrata  
:18-19mm



Optic disc to ora serrata :23-24mm

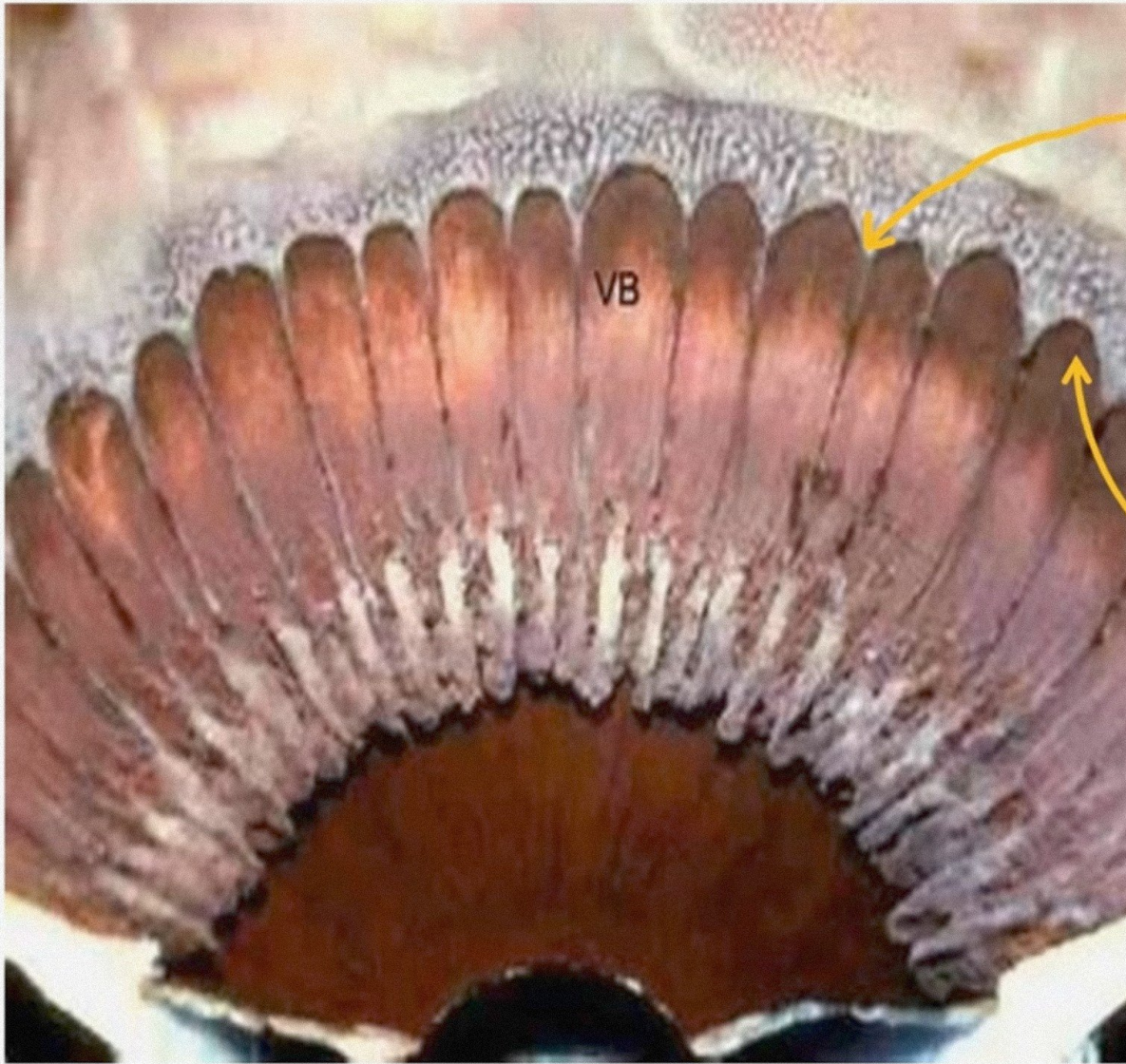
Ora serrata has a scalloped appearance and is much more serrated nasally than temporally





- Scalloped appearance
- More serrated nasally
- **More anteriorly situated nasally**
- **Distance from limbus →**
- **NASALLY :6mm**
- **TEMPORALLY : 7mm**

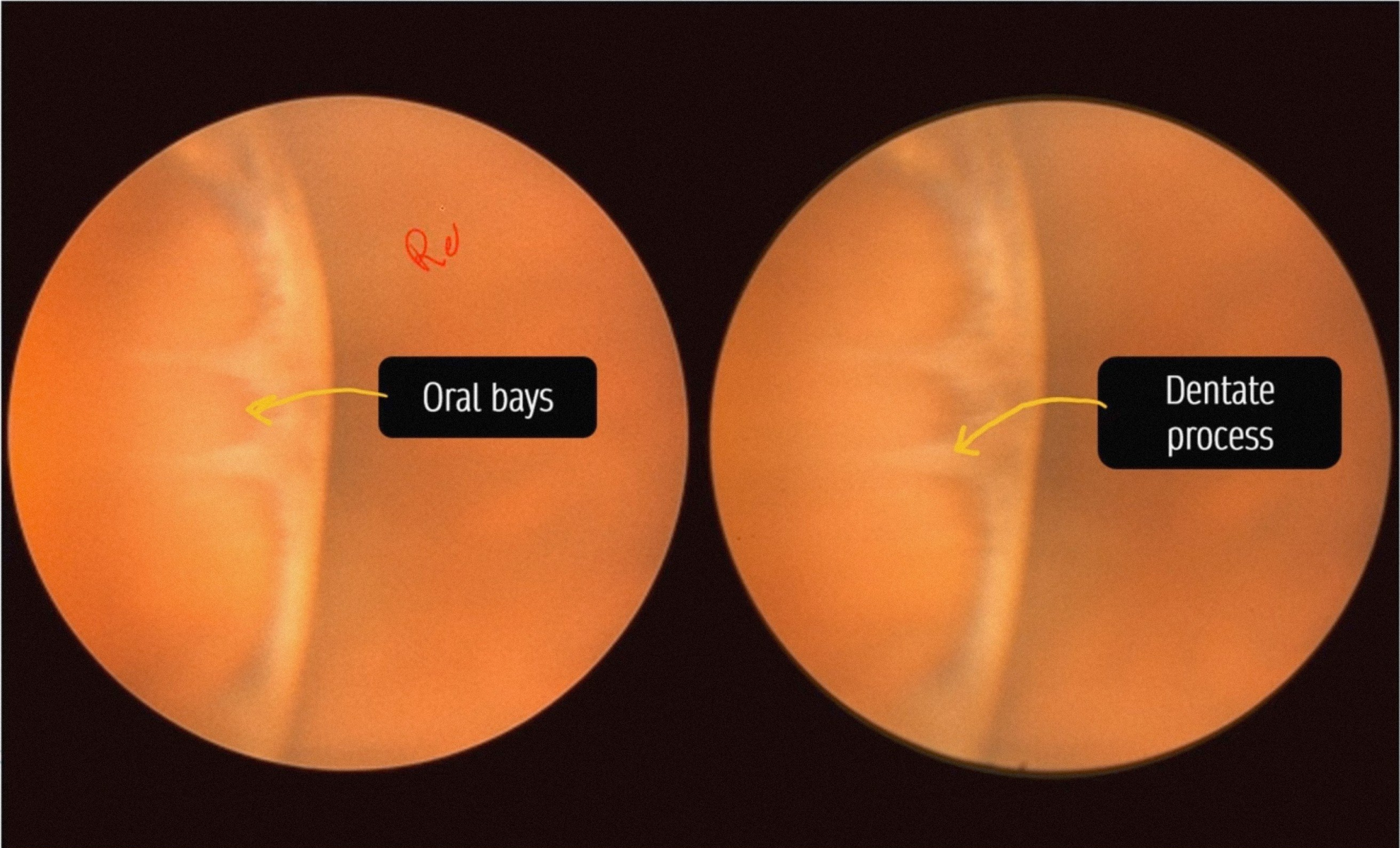


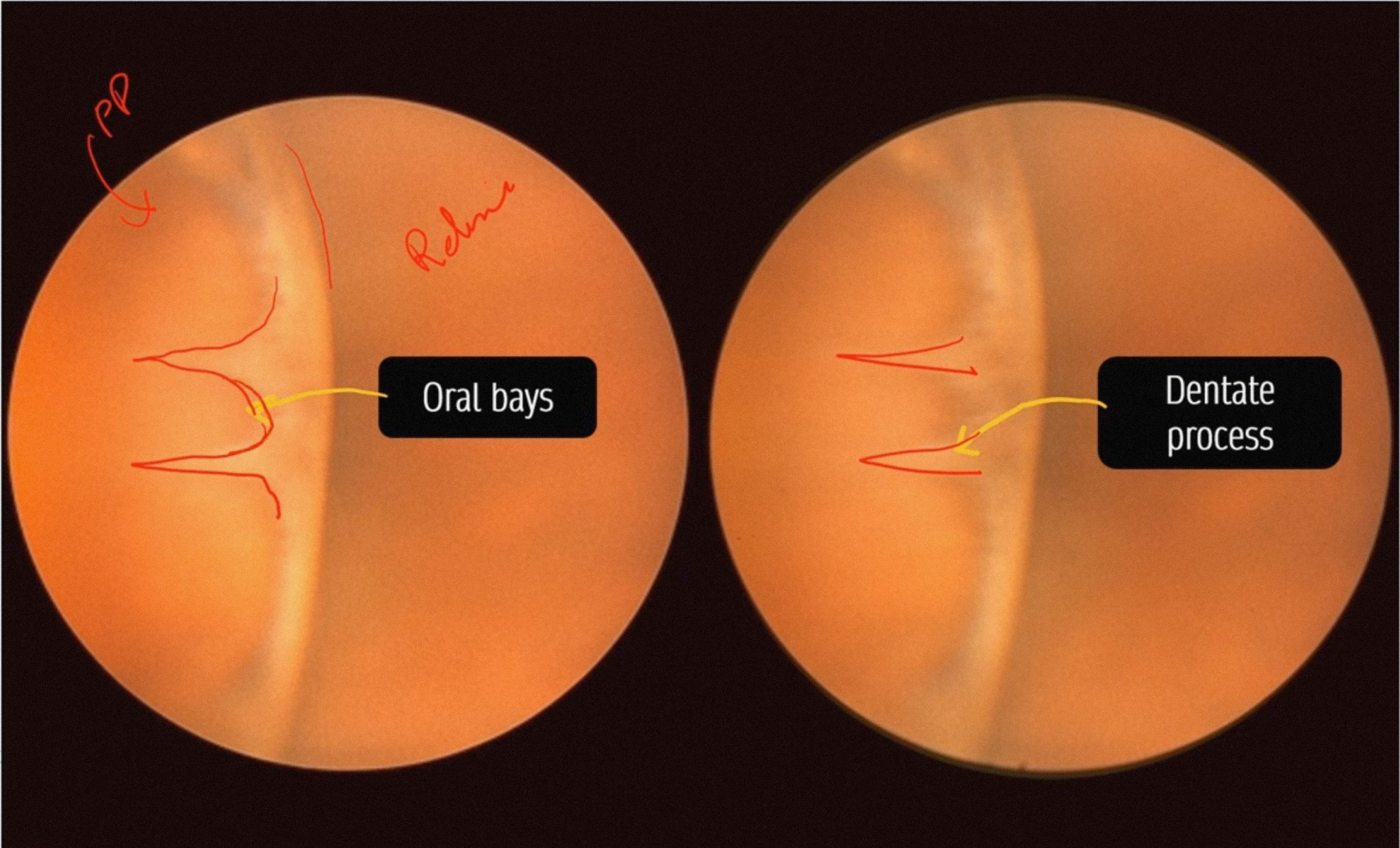


Dentate process

Oral bays





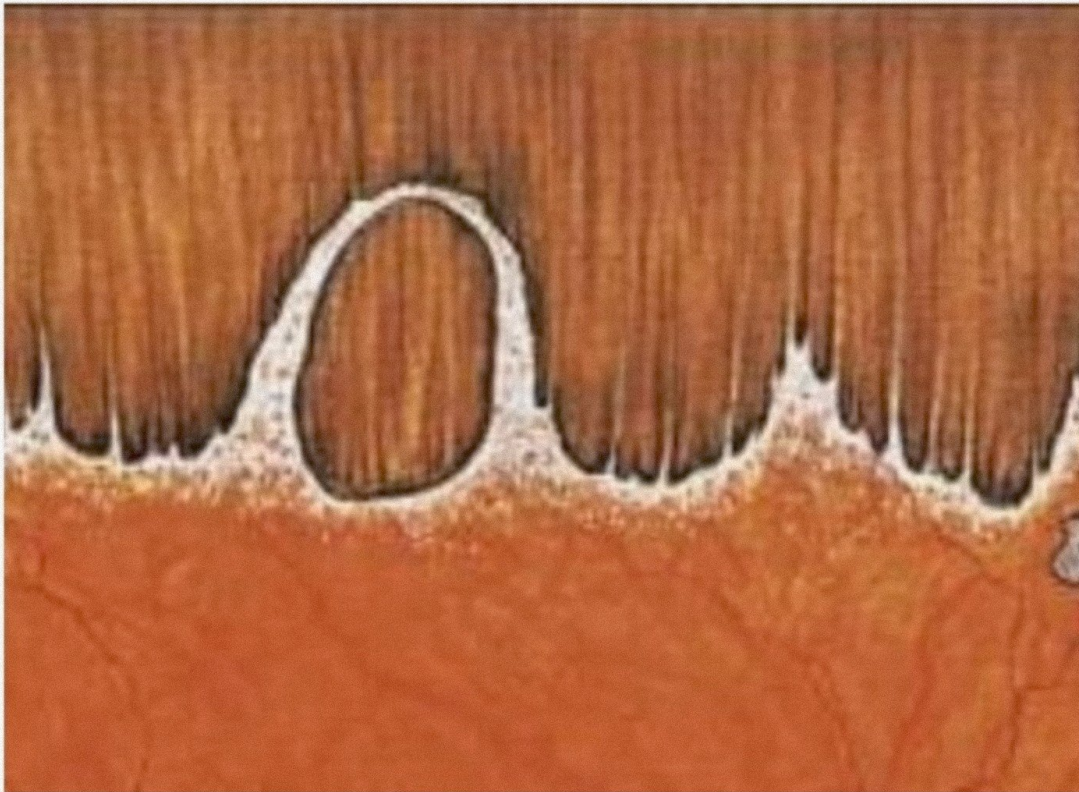


UWF

A



# ENCLOSED ORAL BAY



Island of pars plana enclosed  
within the retinal tissue





# ENCLOSED ORAL BAY

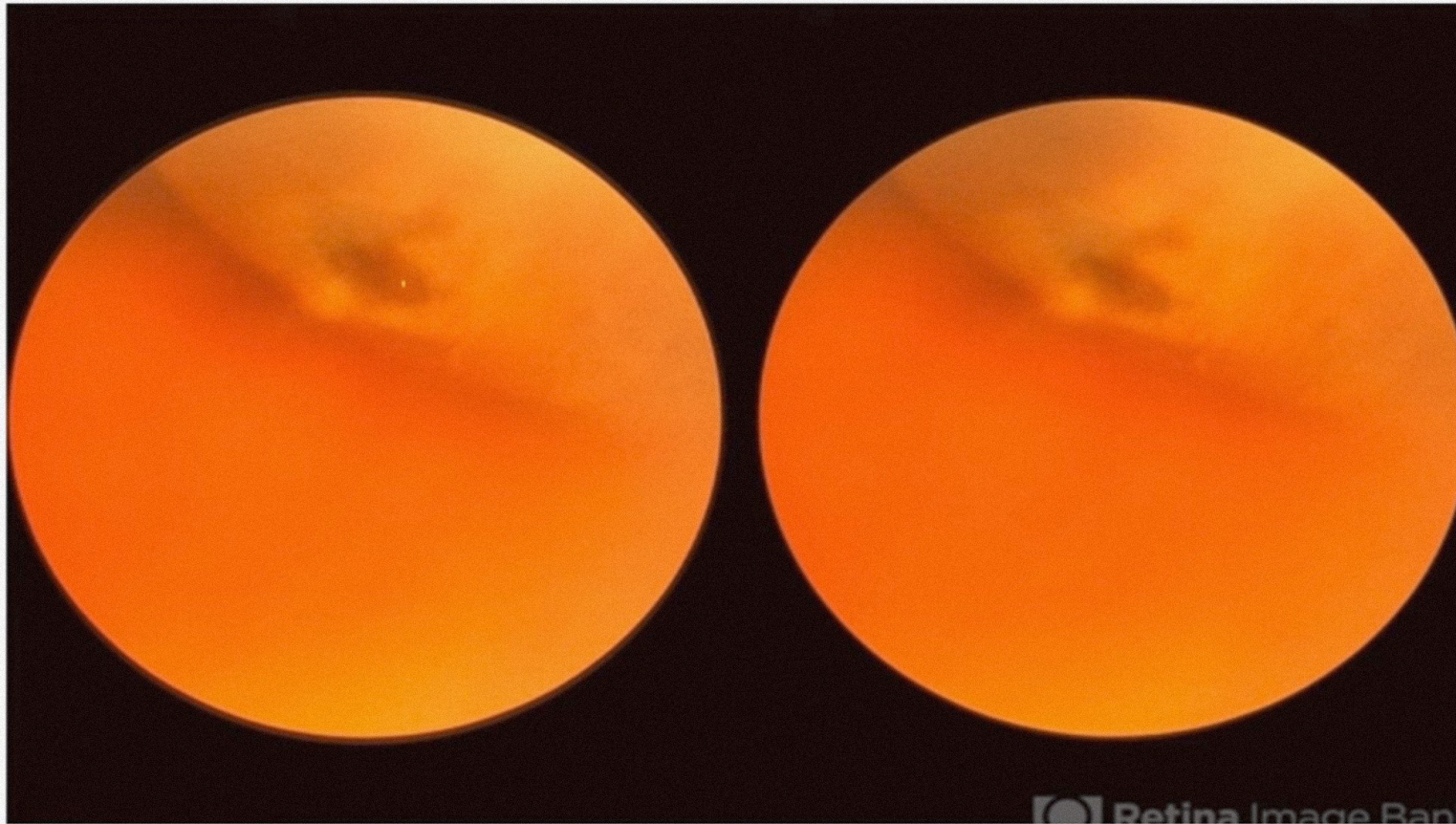
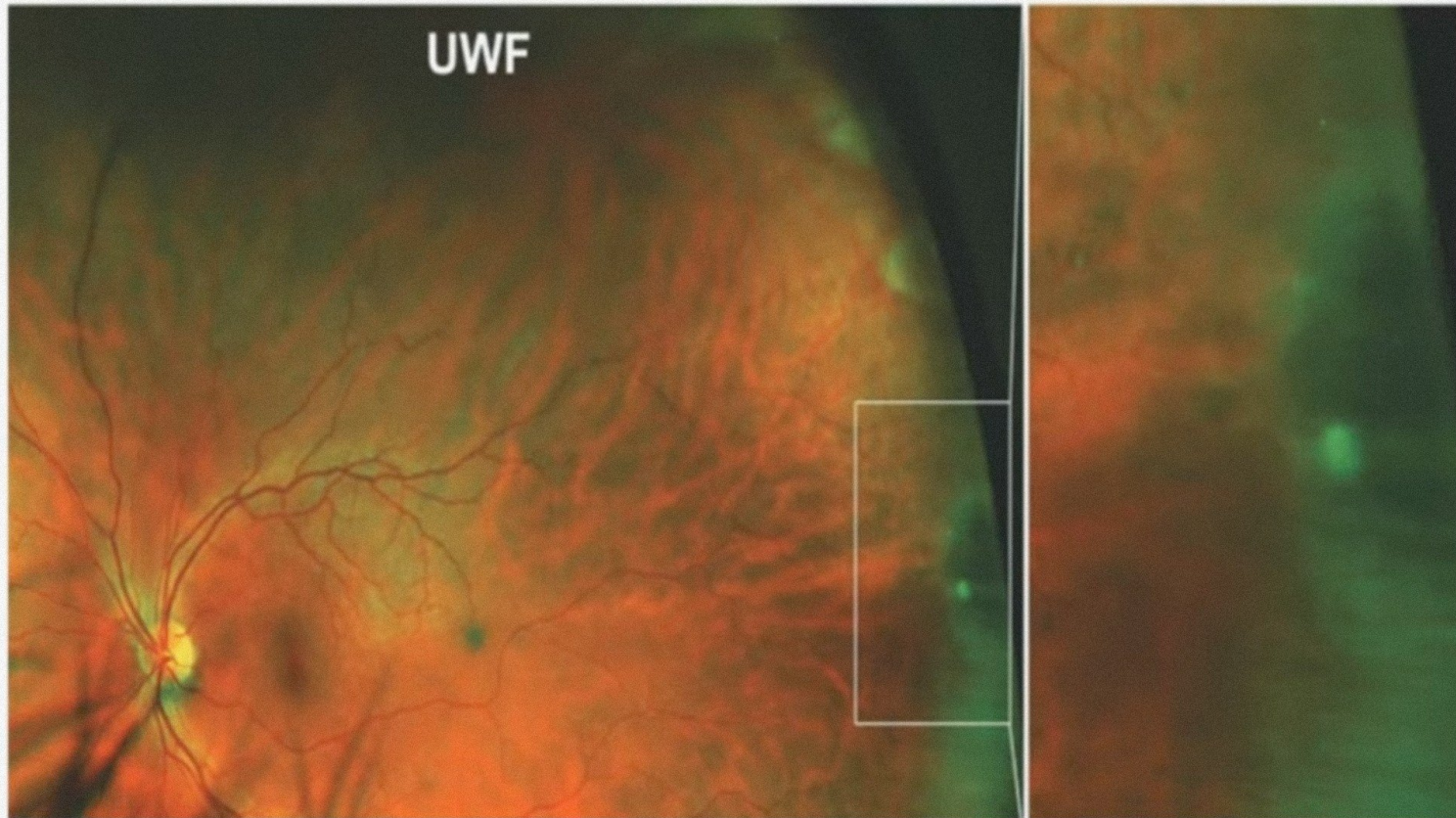




Figure 26-12. Partially enclosed ora bay in a 20-year-old woman. Posteriorly, the ora bay extends 1.8 mm behind general line of ora serrata, and the retina shows a large area of typical cystoid degeneration. Anteriorly, the ora bay is embraced by two long dentate processes that converge toward, but do not meet, a prominent ciliary process of the pars plicata. ( $\times 12$ .)

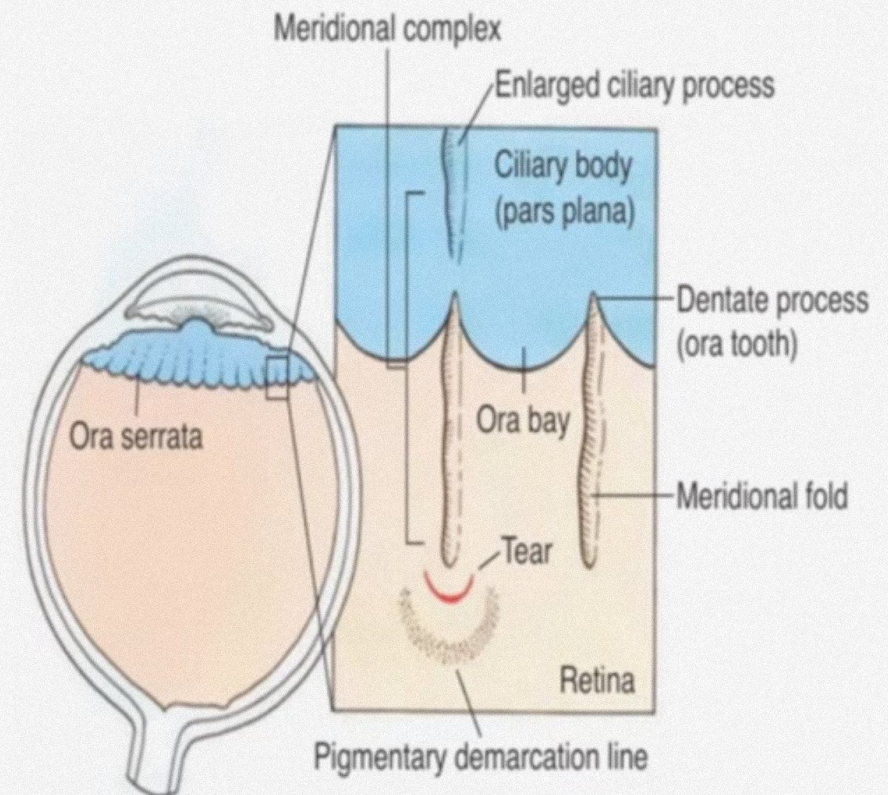
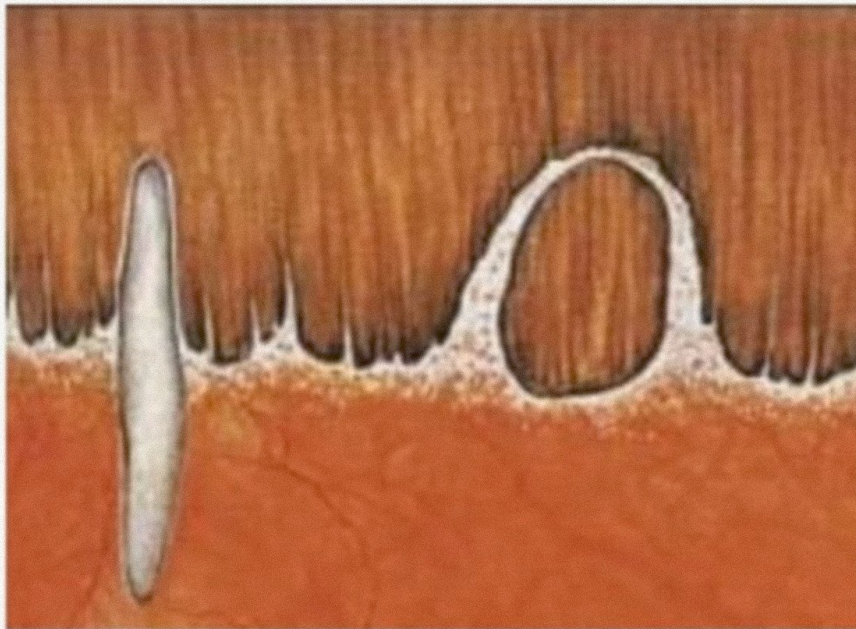


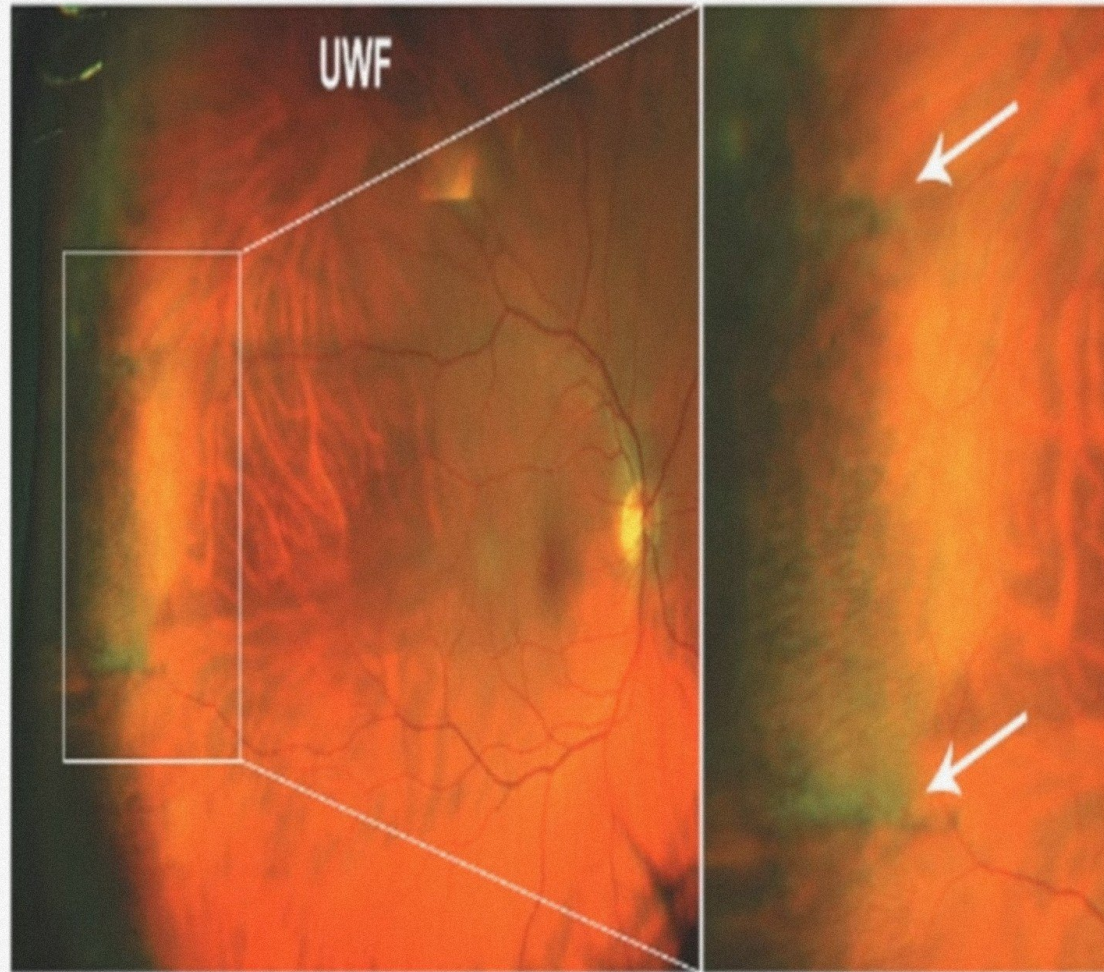
# ORAL PEARLS



# MERIDIONAL FOLD

- Radially oriented
- Thickened retinal tissue
- Extending into the pars plana region



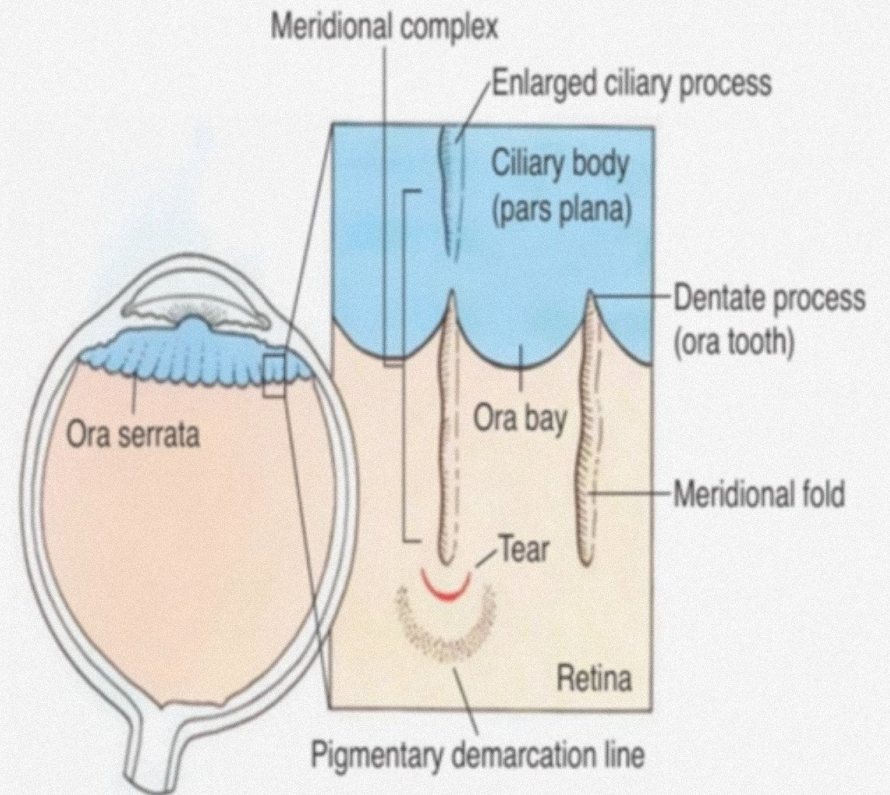
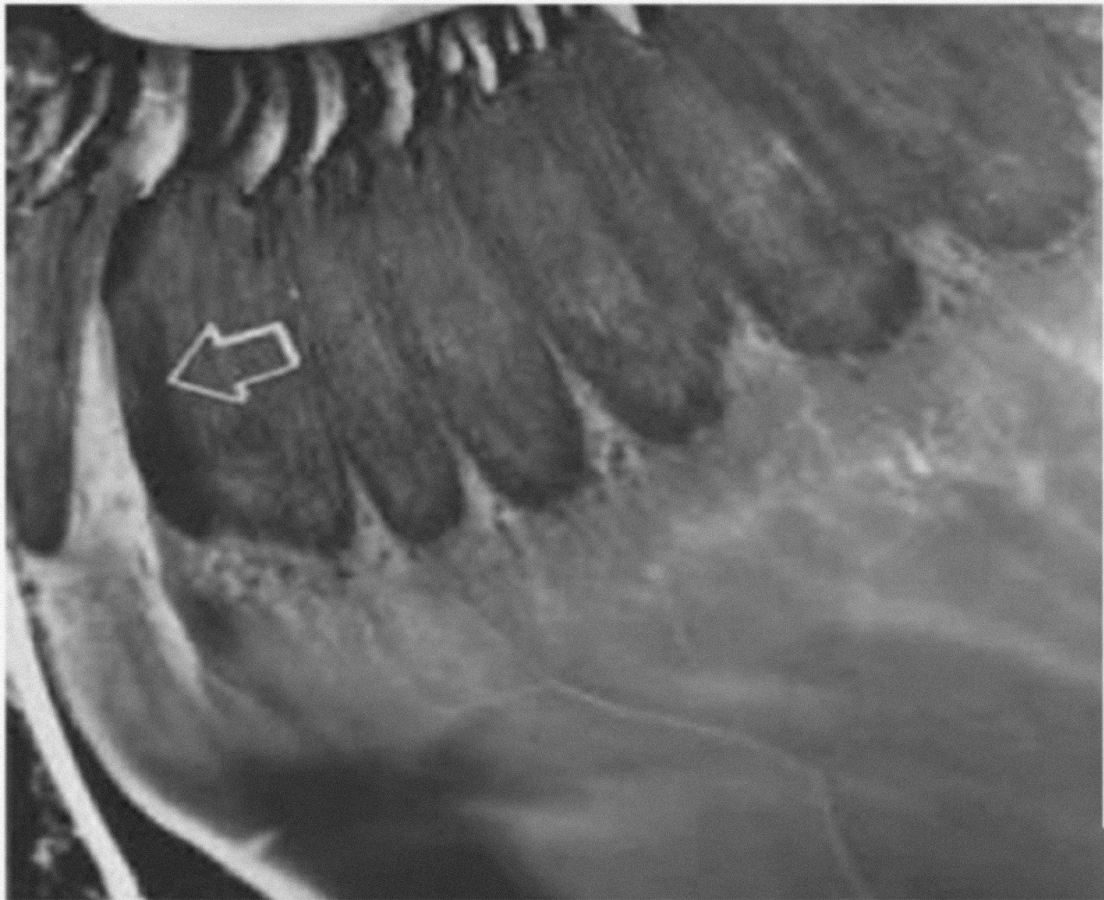


## Why Degenerations Are More Common In Ora Serrata Region ?

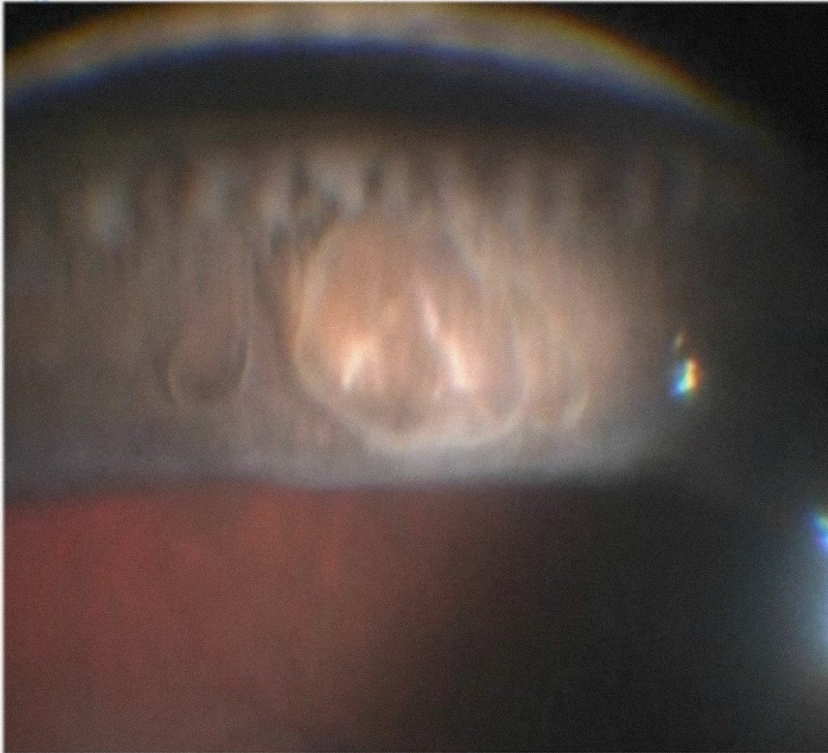
- Represents the watershed zone between the anterior and posterior vascular systems
- Has only one single layer of blood vessels
- The retina is thinned out here : **100 microns**



# MERIDIONAL COMPLEX



# PARS PLANA CYST



- Pars plana cysts are smooth, bullous elevations occurring between the non-pigmented and pigmented ciliary epithelium.
- Cysts contain hyaluronic acid (similar to cystoid spaces and retinoschisis), and are semi-transparent although pigment granules are also often present within cells of the inner cyst wall



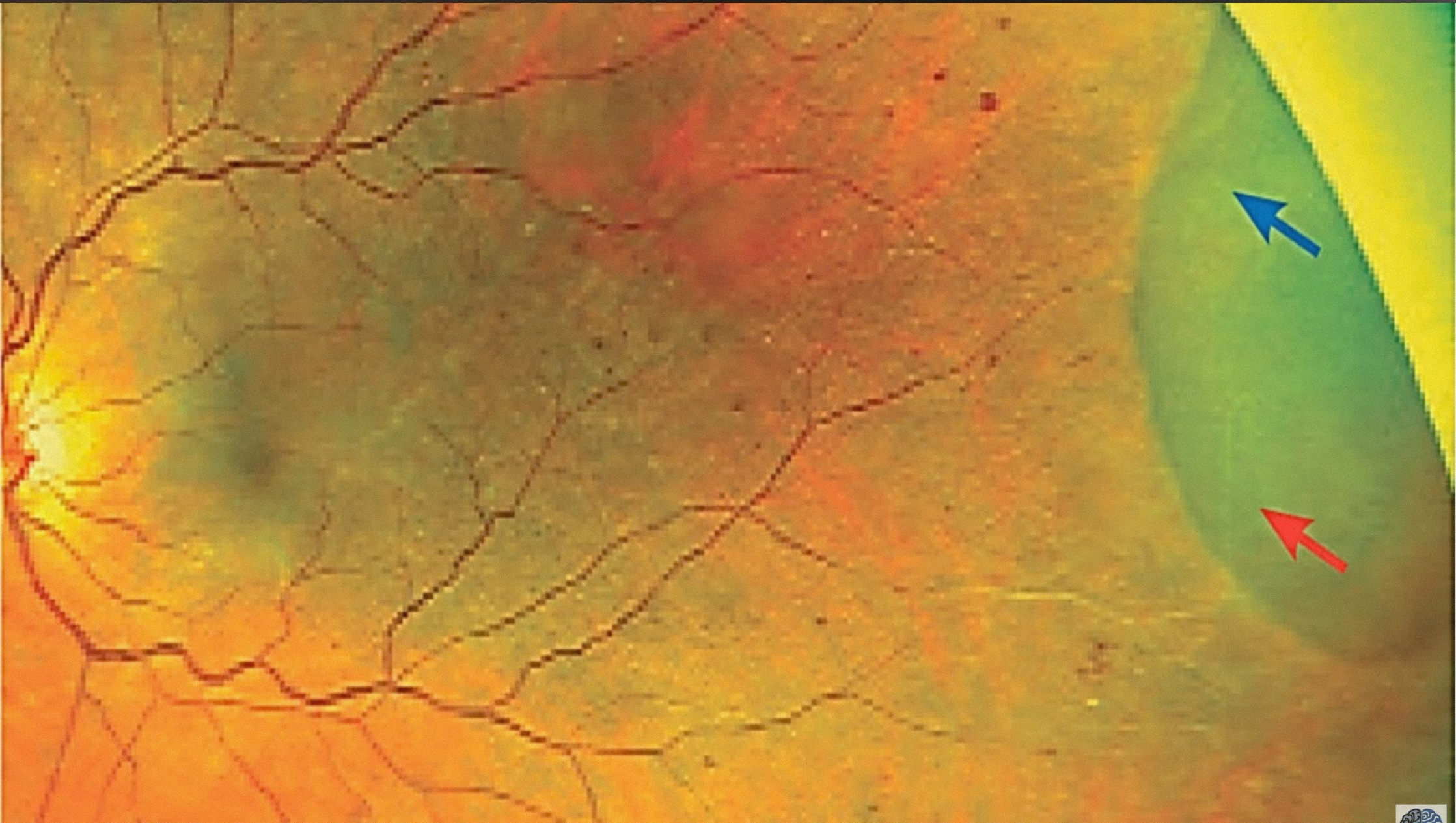




Image credit : Retina bank

Pars plana cysts found during peripheral indentation at the conclusion of vitrectomy for rhegmatogenous retinal detachment.





# NERVES AND VORTEX VEINS

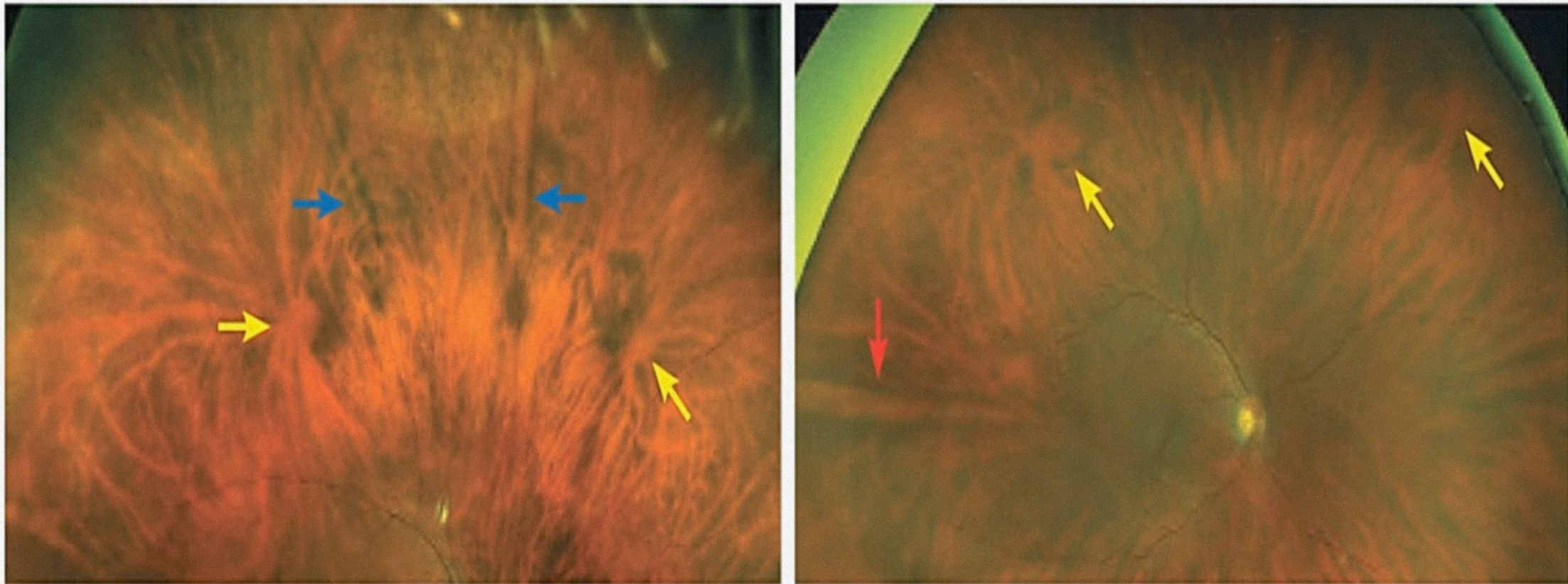
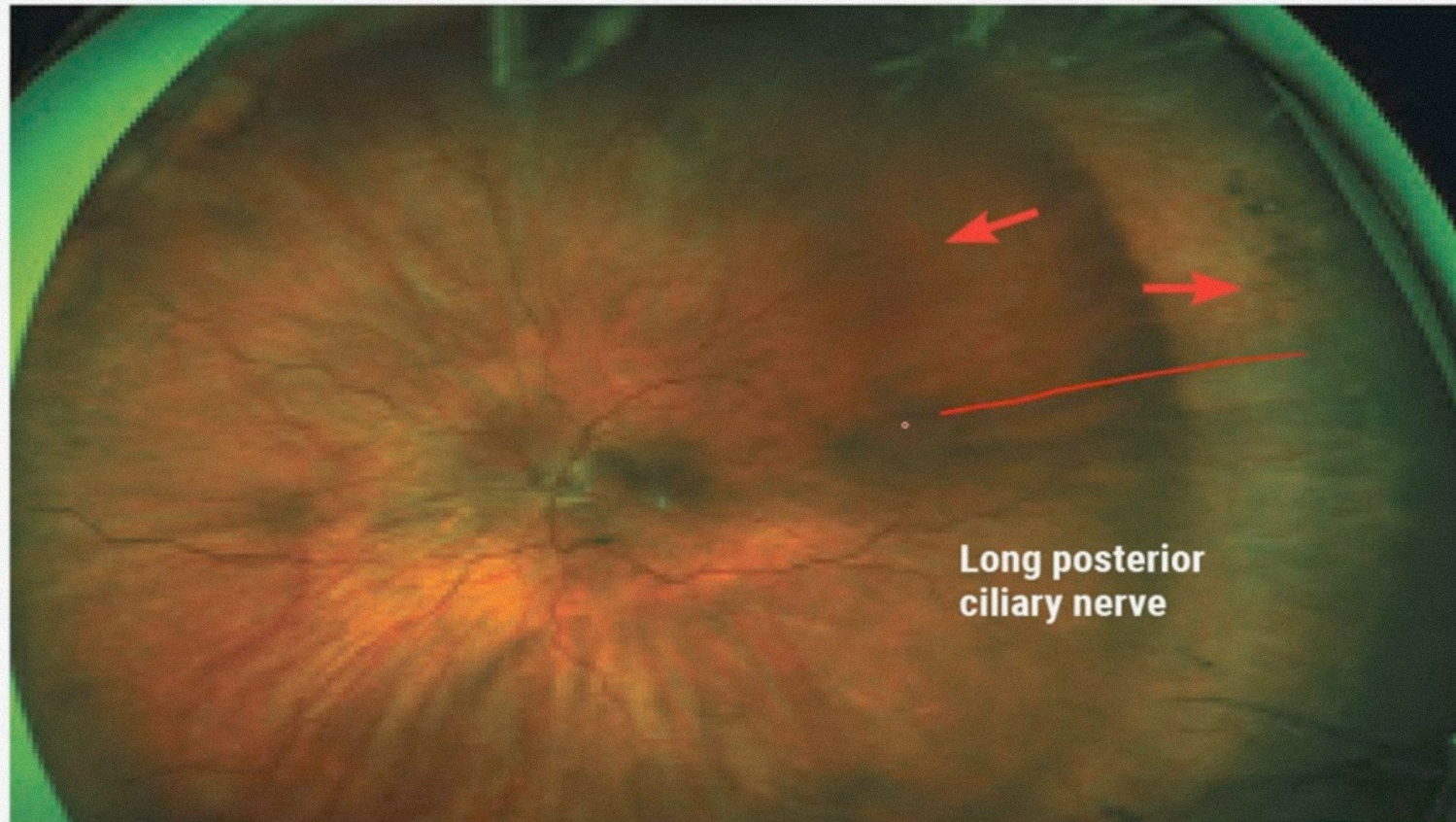


Fig. 1. Vortex ampullae (yellow arrows), long posterior ciliary nerves (red) and short posterior ciliary nerves (blue) are common findings.



# VARIABLE RPE DISTRIBUTION



**Fig. 2. The red arrows delineate a normal variation of RPE distribution from the retinal periphery toward the posterior retina. This variation can result in suspicions of retinal detachment or retinoschisis.**

