

# ROP staging



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# International Classification

- The international classification of ROP divided the retina into three anteroposterior zones and describes the extent of disease by the  $30^\circ$  meridians (clock-hours) involved.
- Retinal changes are divided into stages of severity, based on descriptive and photographic standards



# Zones of Involved Retina

- Each of the three zones of the retina is centered on the optic disc.
- Zone I includes the posterior pole and is defined as a circle, centered on the disc, whose radius is twice the distance from the disc to the center of the macula. It subtends an arc of about  $60^\circ$ .



# Zones of Involved Retina

- Clinically, the temporal edge of zone I is visible with a 25 or 28 D lens, with the other edge of the field of view centered on the nasal disc margin.



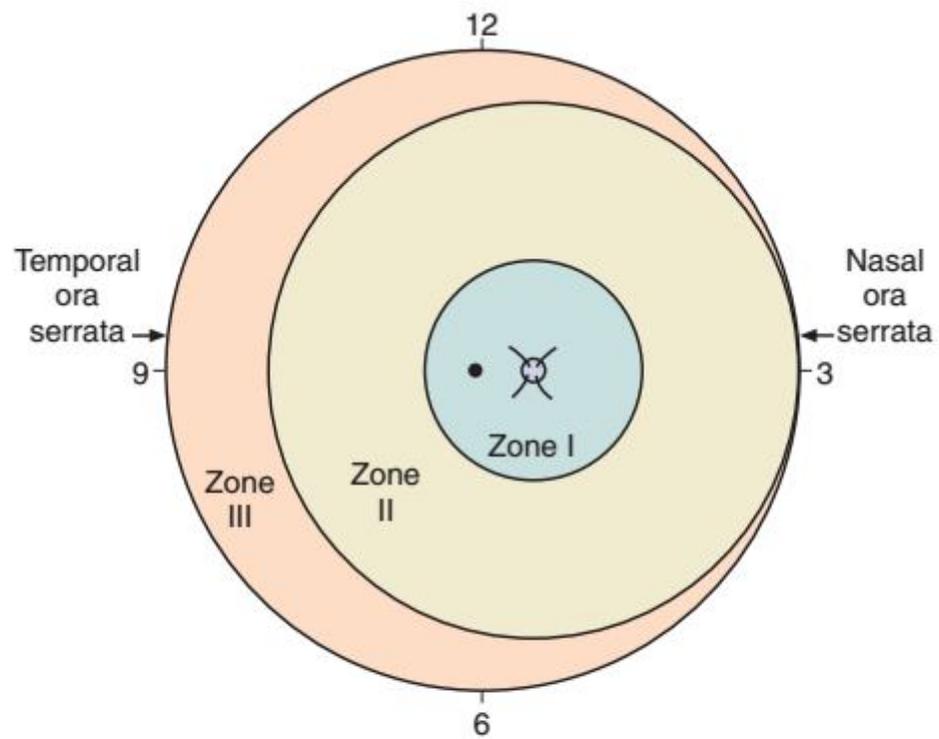
# Zones of Involved Retina

- Zone II extends from the peripheral border of zone I to a concentric circle tangential to the nasal ora serrata.
- Temporally, this boundary corresponds approximately to the anatomic equator.



# Zones of Involved Retina

- Once the nasal vessels have reached the ora serrata, zone III is the remaining temporal crescent of retina anterior to zone II.
- Zone III, which is the farthest from the disc, is the last zone to become vascularized.
- It is clinically important to continue classifying ROP as zone II if there remains any active ROP or immature vessels in the nasal retina



**Fig. 64.14** Schematic diagram of a right eye, showing zones of the retina and clock-hours used to describe the location and extent of retinopathy of prematurity.



# Extent of Retinopathy of Prematurity

- The extent of the ROP changes is described according to the twelve 30° sectors involved, labeled as hours of the clock:
- the nasal side of the right eye is at 3:00, and the nasal side of the left eye is at 9:00



# Staging

- Abnormal peripheral changes are divided into three stages, which may progress to retinal detachment (stages ۴–۵)



# Staging

- Stage 1: immature vascularization, no ROP



# Staging

- Stage 1: Demarcation Line the first ophthalmoscopic sign of ROP
- This represents a structure separating the anterior, avascular retina from the posterior, vascularized retina.
- It appears flat and white, and lies within the plane of the retina.
- Stage 1 is relatively evanescent, generally either progressing to stage 2 or involuting to normal vascularization within several weeks.



# Staging

- Stage ृ: Ridge
- In stage ृ, the demarcation line has grown into a ridge with height and width, which extends centripetally within the globe.
- The ridge may be white or pink and, rarely, vessels may even leave the surface of the retina to enter it.



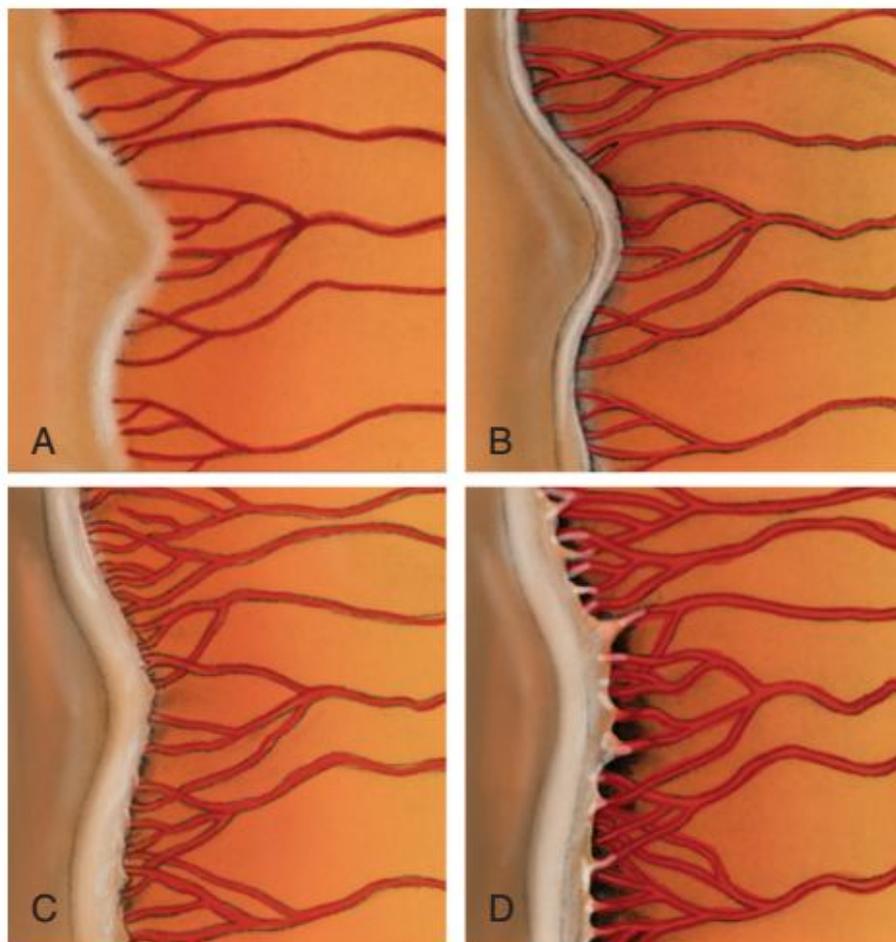
# Staging

- Stage २: Ridge
- Small tufts of new vessels (“popcorn” lesions) may be seen located posterior to the ridge structure but not attached to it.
- The absence of fibrovascular growth from the surface of the ridge separates this stage from stage ३.



# Staging

- Stage 3: Ridge With Extraretinal Fibrovascular Proliferation
- Stage 3 is characterized by the addition of extraretinal, fibrovascular tissue proliferating from the former ridge





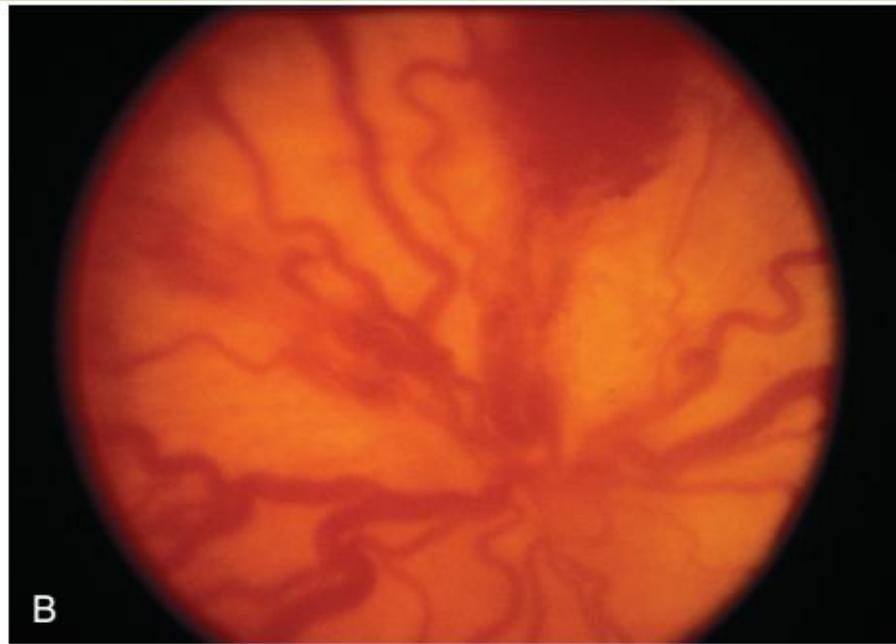
# Staging

- “Plus” and “Pre-Plus” Disease.
- Plus disease signifies a more florid form of ROP.
- **Increasing dilation and tortuosity of the retinal vessels, iris vascular engorgement, pupillary rigidity, and vitreous haze indicate progressive vascular incompetence.**



# Staging

- “**Plus**” and “Pre-Plus” Disease.
- When vascular changes are so marked that the **posterior veins are enlarged and the arterioles tortuous**, this represents plus disease, and a plus sign is added to the ROP stage number.
- This finding is a key sign of **worse prognosis**.





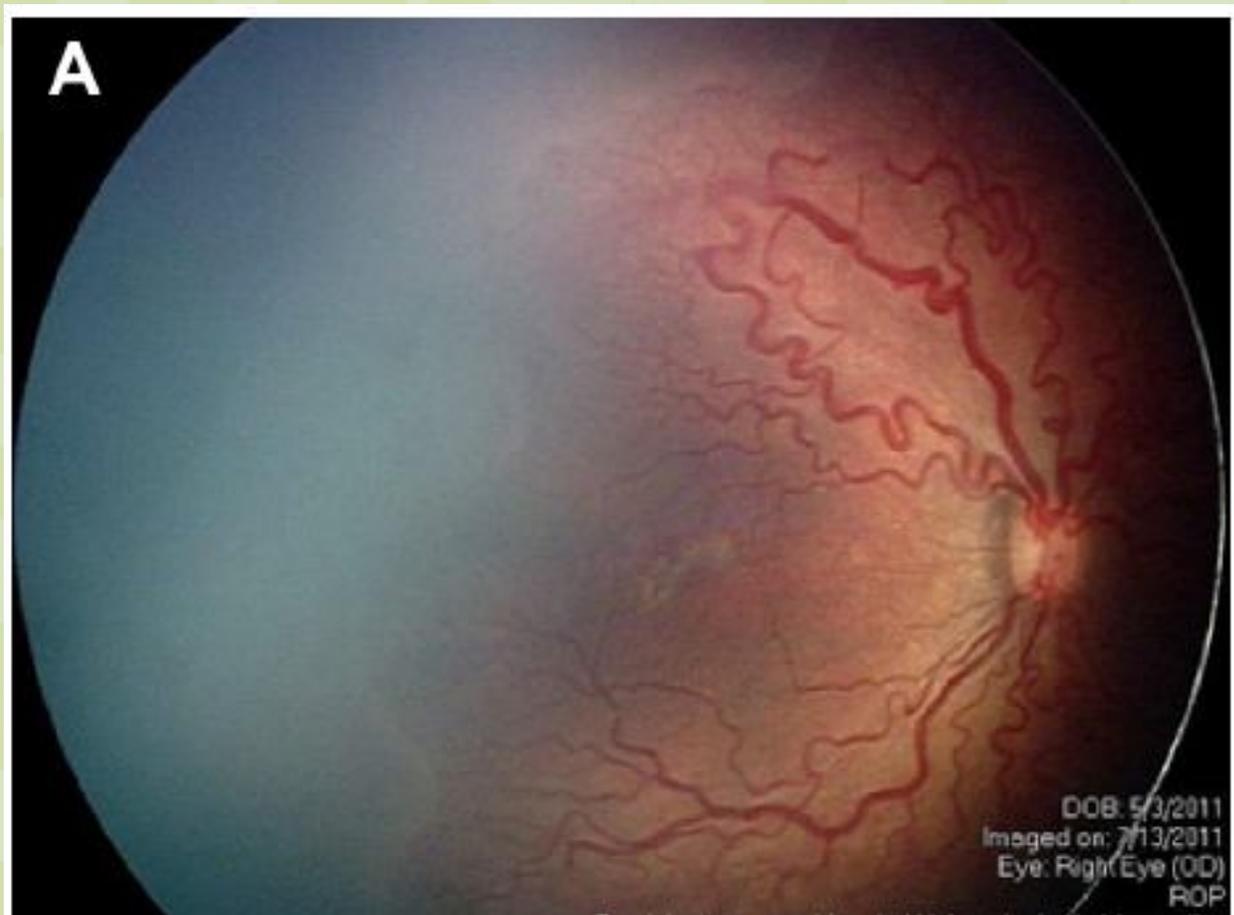
# Staging

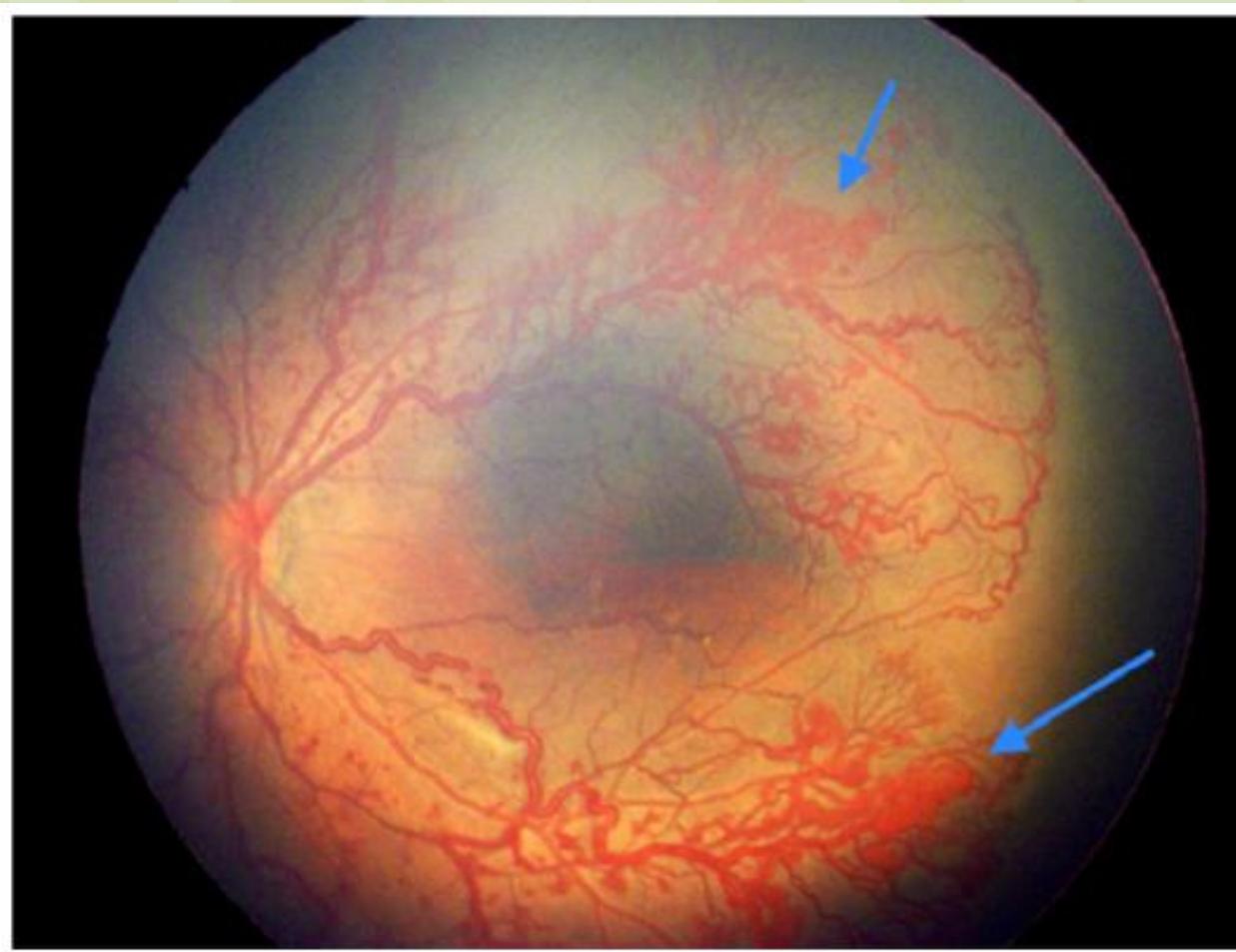
- **APROP**: rush disease
- location in zone I or posterior zone II, **ill-defined nature of the peripheral retinopathy**, and **prominent plus** disease out of proportion to the peripheral findings.



# Staging

- **APROP**
- This diagnosis can be made by a single examination without serial evaluation and may not progress through the class stages 1–3.
- In fact, the peripheral disease may appear as a **flat area of neovascularization** at the junction of vascular and avascular retina.







# Staging

- Stage 4 (subtotal) retinal detachment is usually tractional elevation added to findings in stage 3, although there may also be exudative effusion from adjacent active stage 3 neovascularization.



# Staging

- Stage ॡA: Extrafoveal Retinal Detachment
- elevation may start in any zone where there was stage ॡ disease that incompletely involuted following ablative treatment with laser photocoagulation or cryotherapy, and they may become circumferential.
- The prognosis anatomically and visually is relatively good in the absence of posterior extension.



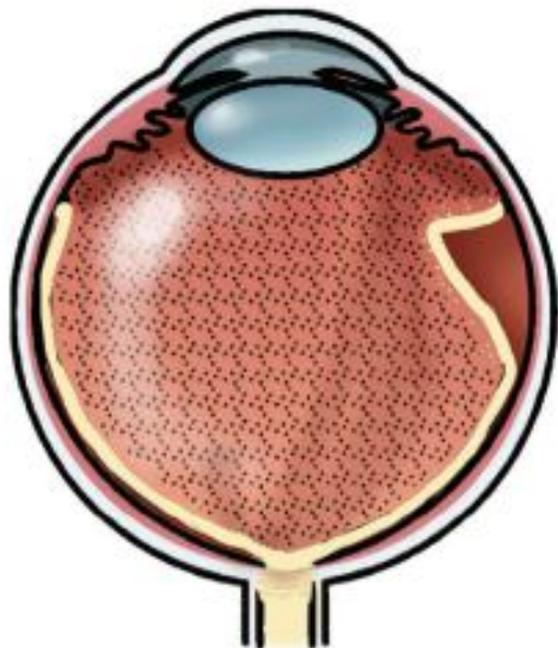
# Staging

- Stage †B: Partial Retinal Detachment Including the Fovea
- This can follow **extension of stage †A**, or **may appear as a fold from the disc through zone I to zones II and III.**
- Once a stage † detachment involves the fovea, the prognosis for recovery of good visual acuity is poor.

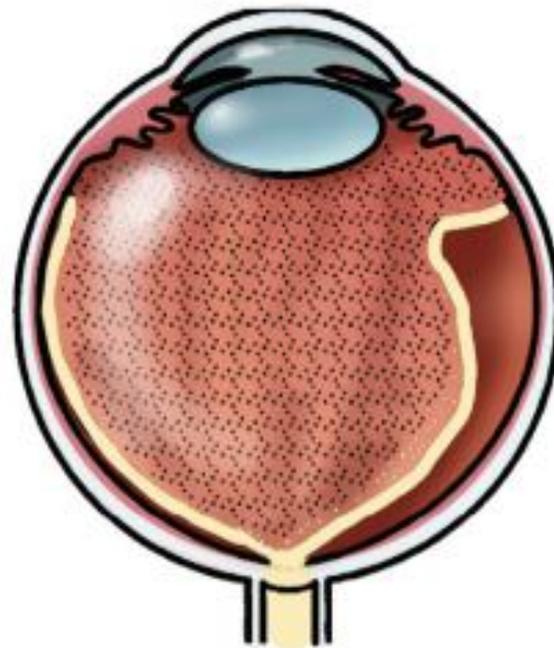


# Staging

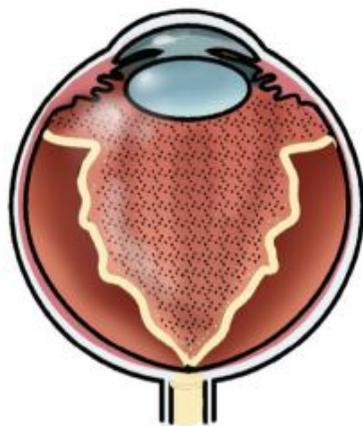
- Stage  $\Delta$ : Total Retinal Detachment
- This is virtually always funnel-shaped. The classification of stage  $\Delta$  detachments divides the funnel into an anterior and a posterior part



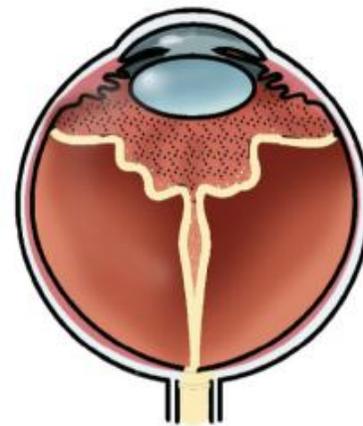
Stage 4a  
Macula attached



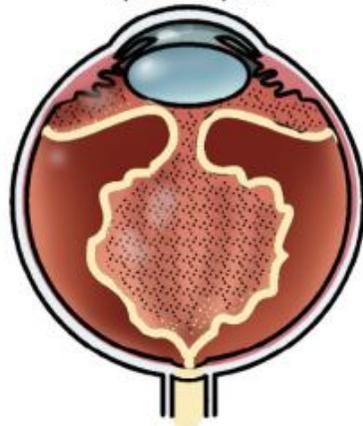
Stage 4b  
Macula detached



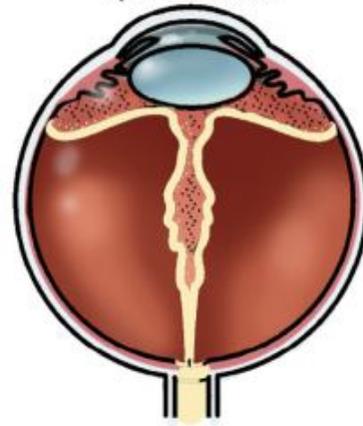
Stage 5  
Open - Open



Stage 5  
Open - Narrow



Stage 5  
Narrow - Open



Stage 5  
Narrow - Narrow



**Thanks for your kind attention**

