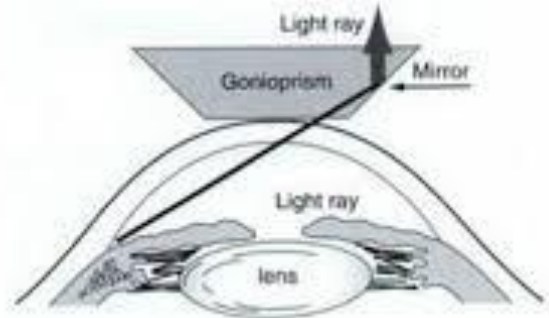
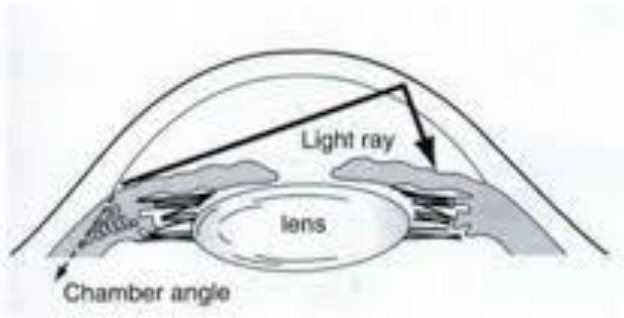
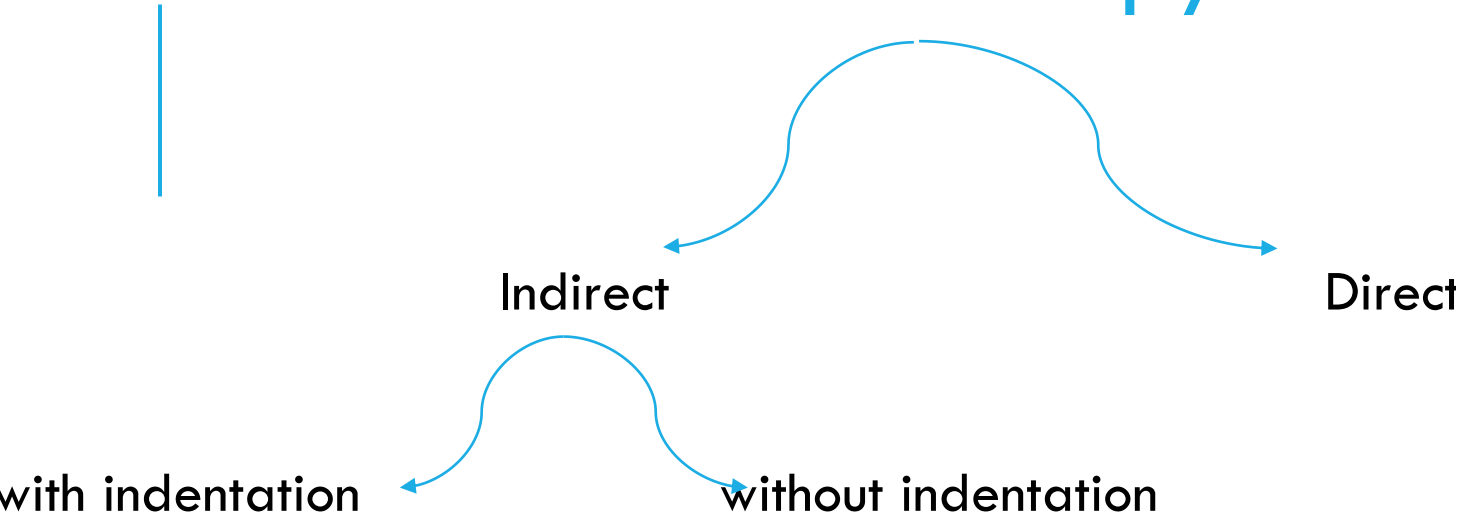


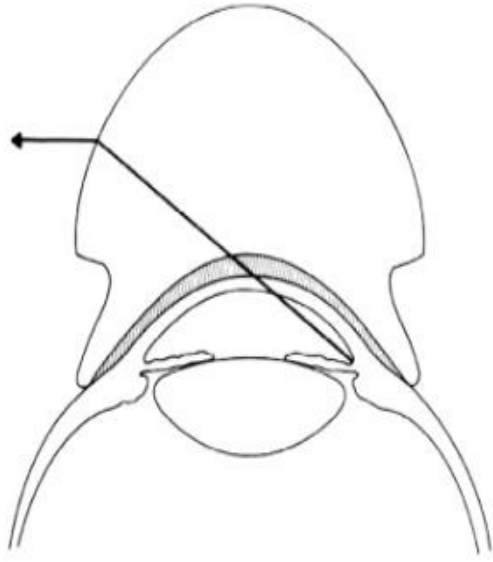
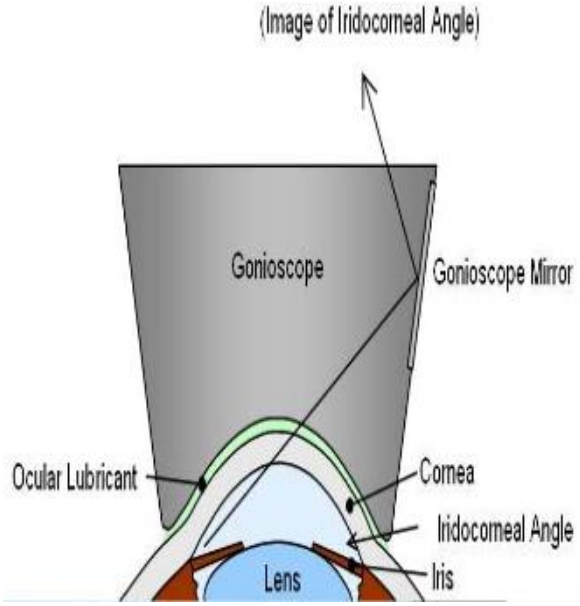
# Gonioscopy



## PRINCIPLE

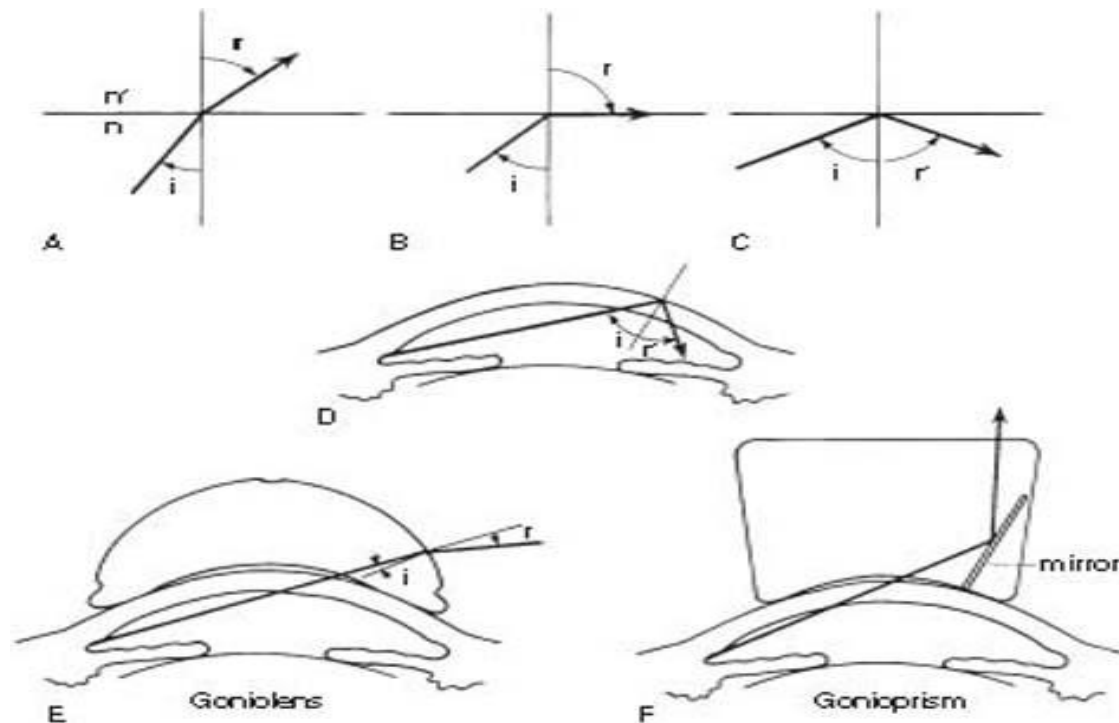
INDIRECT

DIRECT



# DIRECT GONIOSCOPY

Angle is viewed directly as direct goniolenses have steeper curvature than the cornea, so the light rays are refracted at the corneal-air interface such that critical angle is not reached



# DIRECT GONIOSCOPY

Koeppe

Swan Jacobs

Layden





# DIRECT GONIOSCOPY

## Advantages:

1. Direct visualization shows normal view.
2. Panoramic view of the entire circumference.
3. Easy to look down over the convex iris.
4. Comparison possible between the two eyes.
5. It can be used for Goniotomy & Goniosynechialysis.
6. Can be done under anesthesia

## Disadvantages:

1. Cumbersome.
2. Supine position.
3. Costly Equipment.
4. Time consuming.
5. Angles look more open as patient lies supine.

# INDIRECT GONIOSCOPY

Goldmann Three or Single mirror

Zeiss Four mirror

Posner Four mirror

Volk Four mirror

# INDIRECT

## Advantages:

- Convenient to use.
- Controlled illumination.
- Manipulation and indentation possible.
- Fundus can be seen through the central lens

## Disadvantages:

- Cannot compare both the eyes simultaneously.
- Needs co-operation of patient.





# INDIRECT GONIOSCOPY



GOLDMANN SINGLE MIRROR



GOLDMANN 3 MIRROR

# GOLDMANN STYLE LENS

Easy to use

Beautiful view

Good for photo and laser

Inconvenient

Can't indent well

Clinic flow

# INDIRECT GONIOSCOPY

**VCARE**



4 Mirror Gonio Lens Black



# Zeiss-style lenses

Convenient

Easy to see whole angle  
great for indentation

Harder to master

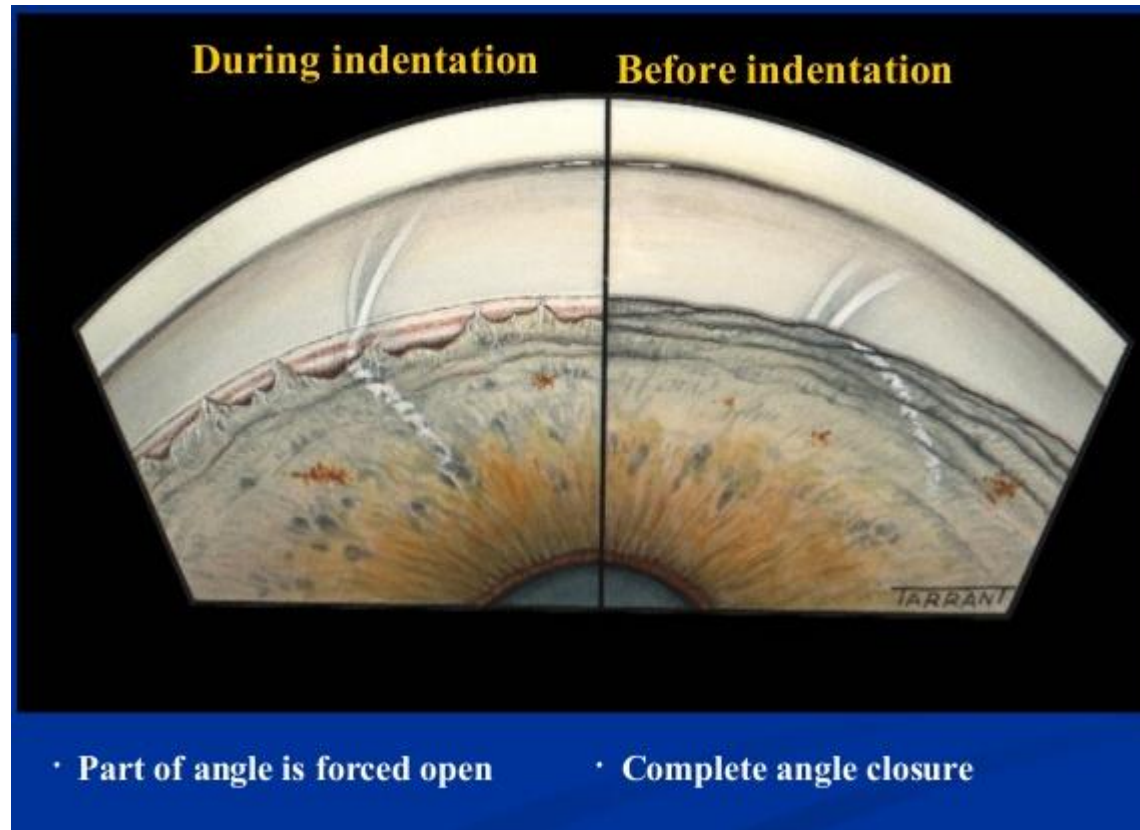
Requires a light touch

# INDENTATION GONIOSCOPY

- Indentation gonioscopy is a strategy that helps determine whether angle closure is the result of the iris being in apposition (i.e., just touching the angle) or the result of the iris actually being stuck on the angle, via synechiae.

Indentation gonioscopy is also a great tool for diagnosing plateau iris. It involves using the lens to apply pressure to the central cornea, driving the iris posteriorly—sort of a dynamic version of the gonioscopy exam

# INDENTATION GONIOSCOPY





Contact Lens	Type	Advantage	Disadvantage
Koepple	Direct	Convenient for examination under anesthesia (EUA), no angle distortion, able to view fundus, easiest for angle photography, excellent anatomic view, panoramic view.	Patient must be in supine position, laborious examination patient dislikes, examiner must change position, gonioscope or operating microscope required.
Barkan	Direct	Surgical goniolens with blunted side allows access for goiotomy, variable sizes.	Same as Koepple.
Goldman 3-Mirror	Indirect	Excellent gonioscopy for neophyte to learn anatomy, viscous bridge creates suction effect stabilizing eye for examination and laser therapy.	Goniogel required for best view which obscures patient's vision and may compromise further same-day diagnostic tests, corneal abrasion in compromised cornea, part of angle hidden in narrow-angled eyes, time consuming when necessary to evaluate both eyes, artificial narrowing of the angle.
Zeiss 4-Mirror	Indirect	Rapid evaluation without goniogel, no corneal compromise with goniogel, further same-day diagnostic tests not compromised, indentation or compression gonioscopy allows expert evaluation of narrow-angled eyes with hidden anatomy, patient friendly, slit lamp friendly with minimal movement to see 360°, option for compression to perform indentation gonioscopy.	Must first master Goldmann gonioscopy, more hand-eye co-ordination necessary than for Goldmann gonioscopy, Unger handle required, easy to apply excessive force causing corneal folds with poor view of angle.

# DIRECT V/S INDIRECT

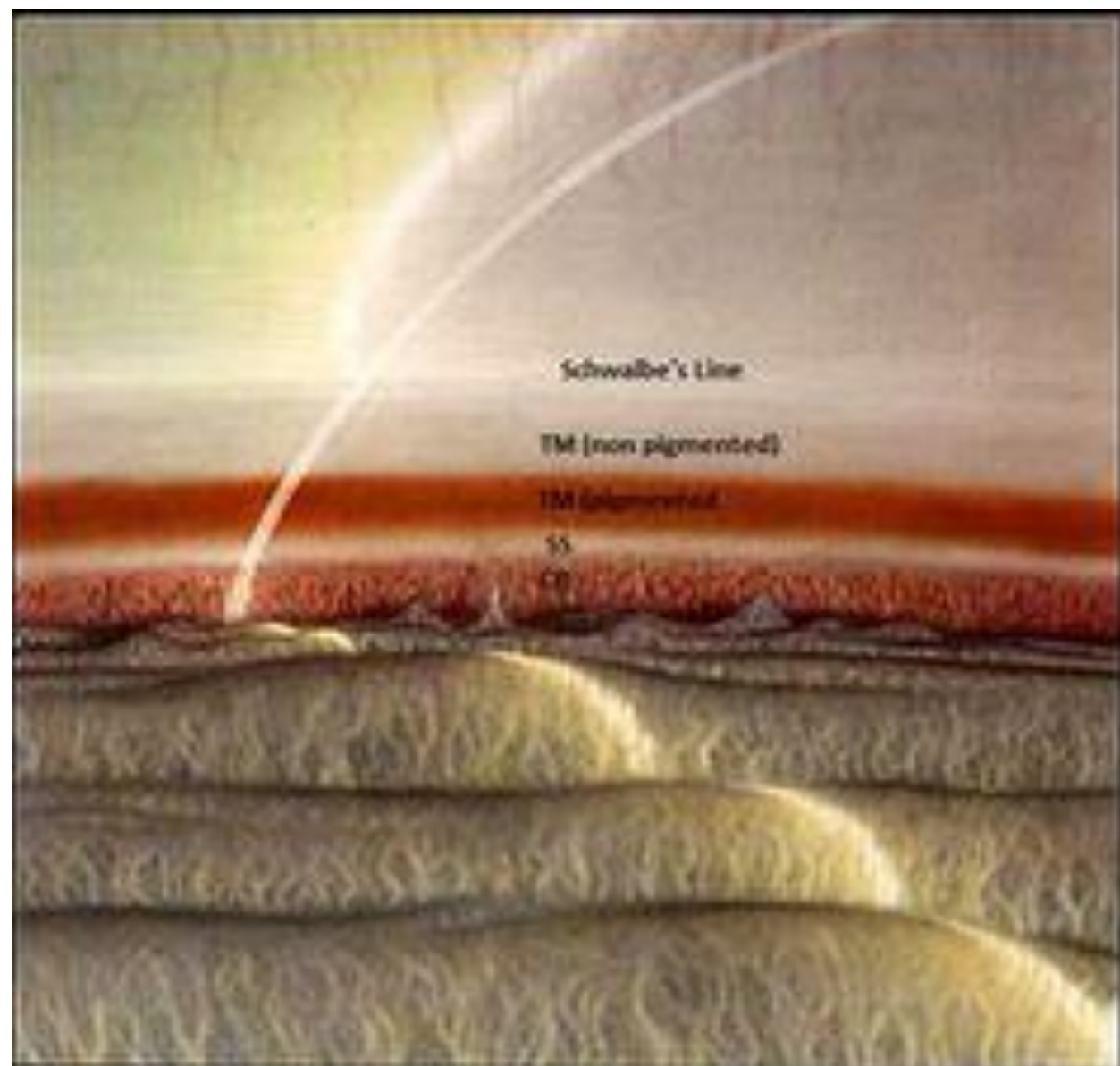
## DIRECT

- ▶ Panoramic view of iridocorneal angle with ability to adjust view by examiner.
- ▶ Both eyes can be examined simultaneously.
- ▶ No viscous [ coupling ] material required.
- ▶ Direct view for surgery e.g. Goniotomy
- ▶ DISADV: Inability to perform indentation, low magnification, assistance.

## INDIRECT

- ▶ Segmental View
- ▶ One Eye at a time
- ▶ Viscous required
- ▶ Mirror Image seen
- ▶ Excellent optics with Slit Lamp
- ▶ Indentation Can be Done





# GRADING THE ANGLE WIDTH

**Table 1. Grade system according to Shaffer gonioscopic classification**

## Shaffer system

Shaffer grade 4	35°-45°	Wide open angle in which all structures were visible up to the iris root and its attachment to the anterior ciliary body.
Shaffer grade 3	20°-35°	Wide open angle up to the scleral spur. In grades 3 and 4, no risk of angle closure existed.
Shaffer grade 2	20°	Angle was narrow with visible trabecular meshwork. In this angle width, a possible risk of closure existed.
Shaffer grade 1	10°	Occurs when the angle was extremely narrow up to the anterior trabecular meshwork and the Schwalbe line, with a high risk of probable closure
Shaffer grade 0	0°	The angle was closed with iridocorneal contact and no visibility of the ACA structures.

## Scheie system

Allocates a Roman numeral accordingly

Higher numeral signifies a narrower angle

# GRADING OF ANGLE

Spaeth system

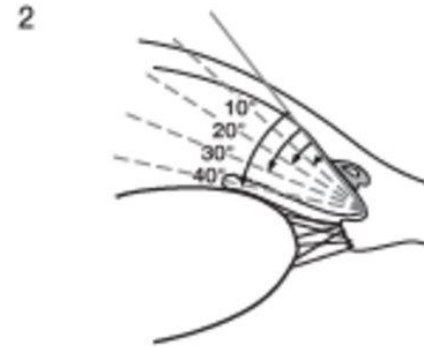
Complicated and underused

Document the insertion level of the iris root before and during compression dynamic gonioscopy



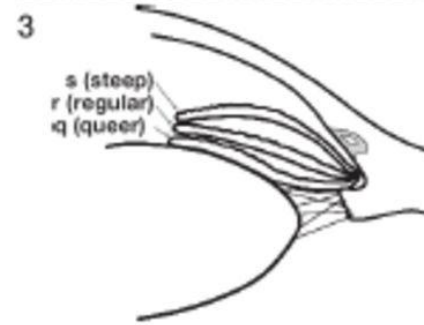
Insertion of iris root

- A Anterior to Schwalbe's line
- B Behind Schwalbe's line
- C On the Scleral Spur
- D Behind the Scleral Spur
- E On the Ciliary Band



Angular width of angle recess

- Slit
- 10° } narrow
- 20° }
- 30° } wide
- 40° }



Configuration of the peripheral iris

- s (steep)
- r (regular)
- q (queer)

- s Steep, anteriorly convex
- r Regular
- q Queer, anteriorly concave



Plateau Configuration

# GRADING OF ANGLE W

Van Herrick method

Screening tool

Overestimates the angle width (particularly those with a plateau iris conformation)



Fig. 2.11. Ángulo de grado 4.



Fig. 2.12. Ángulo de grado 3.



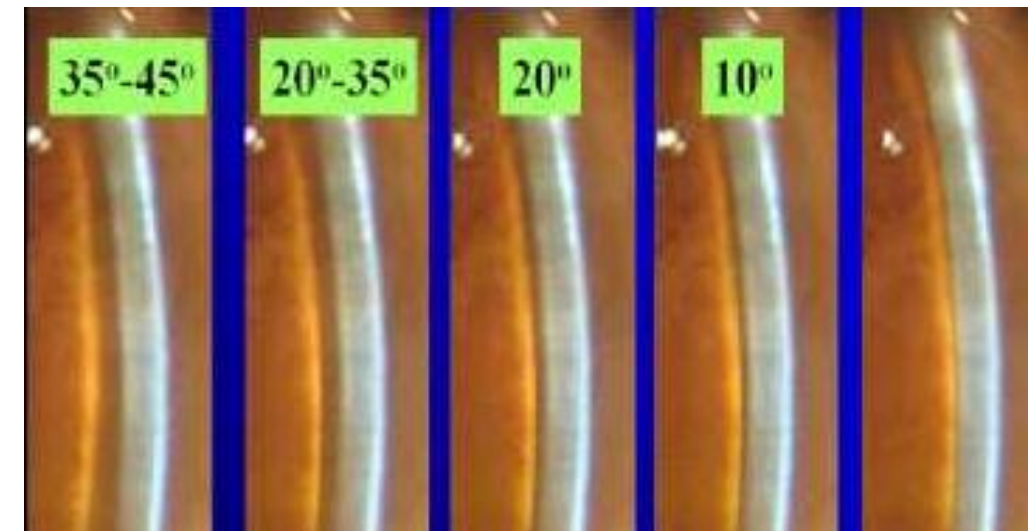
Fig. 2.13. Ángulo de grado 2.



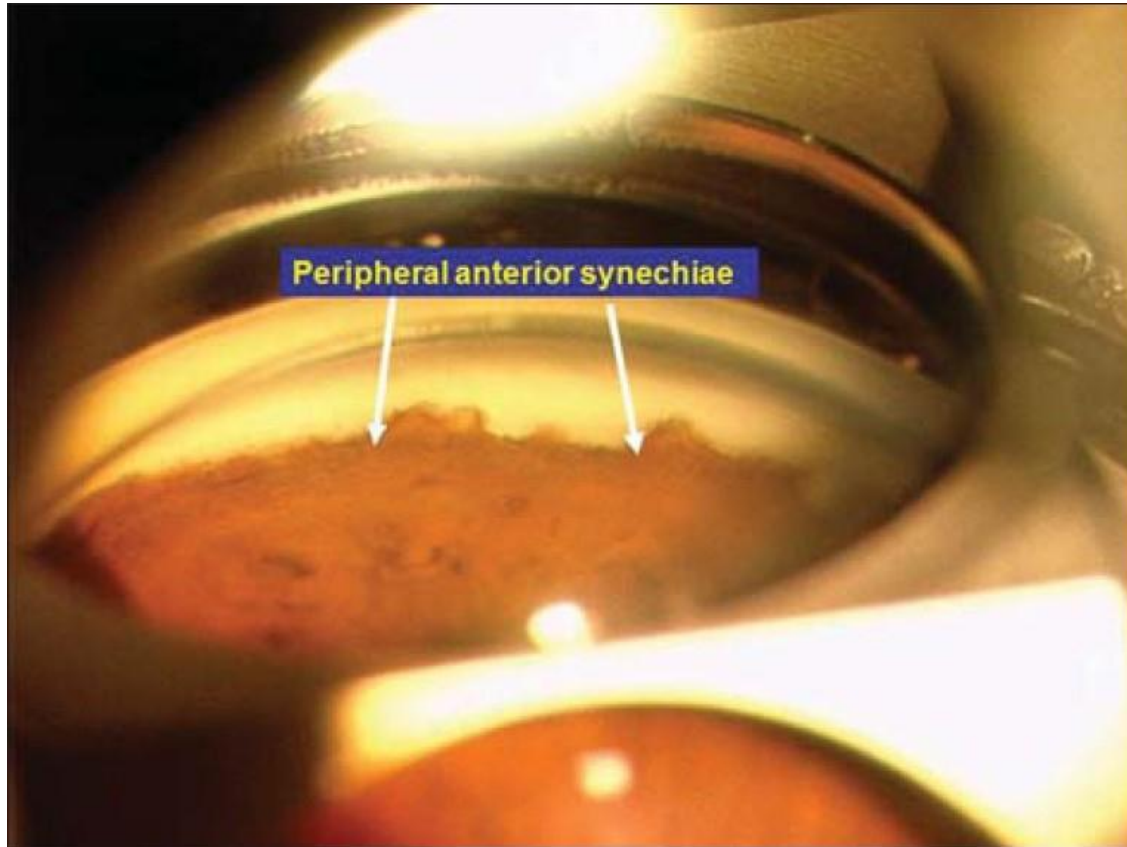
Fig. 2.14. Ángulo de grado 1.

Table 10.1 Van Herick method for anterior chamber angle assessment

Anterior chamber depth as a proportion of corneal thickness	Description	Grade	Comment
$\geq 1$	Peripheral AC space equal to full corneal thickness or larger	4	Wide open
$\frac{1}{4}$ – $\frac{1}{2}$	Space between one-fourth and one-half corneal thickness	3	Incapable of closure
$\frac{1}{4}$	Space equal to one-fourth corneal thickness	2	Should be gonioscoped
$< \frac{1}{4}$	Space less than one-fourth corneal thickness	1	Gonioscopy will usually demonstrate a dangerously narrowed angle



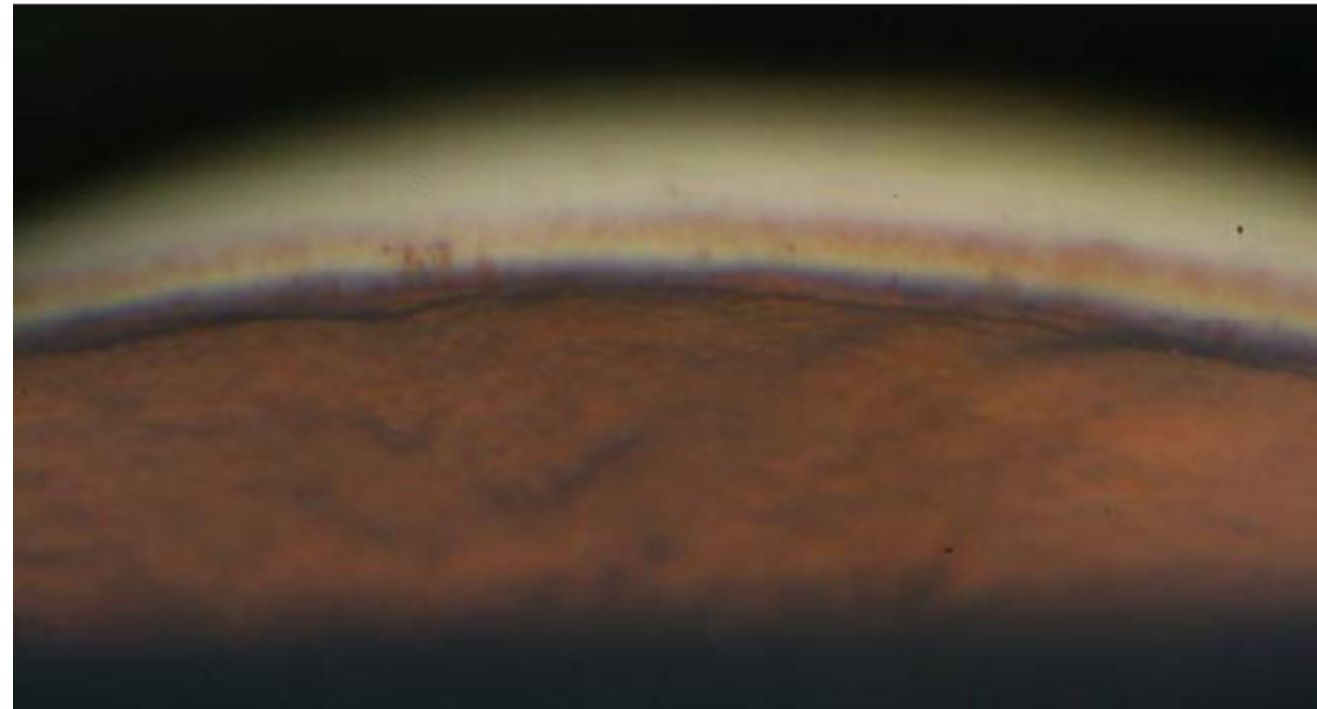
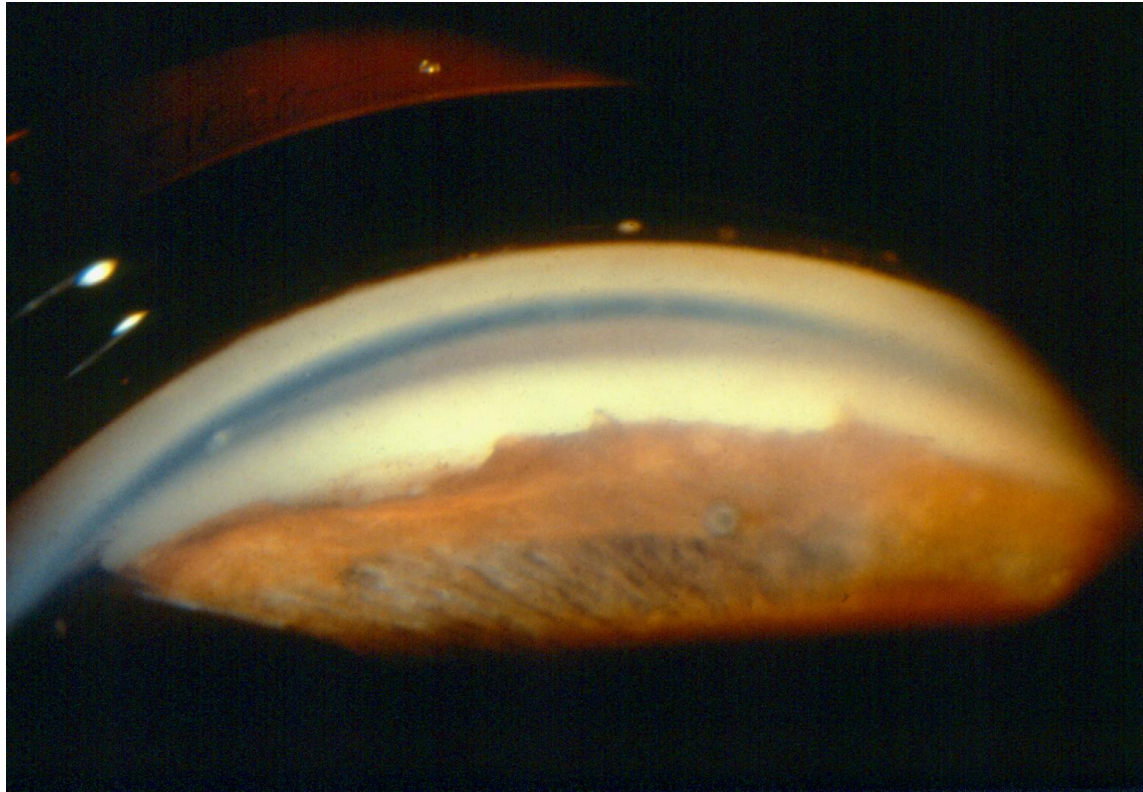
# PATHOLOGICAL FINDINGS



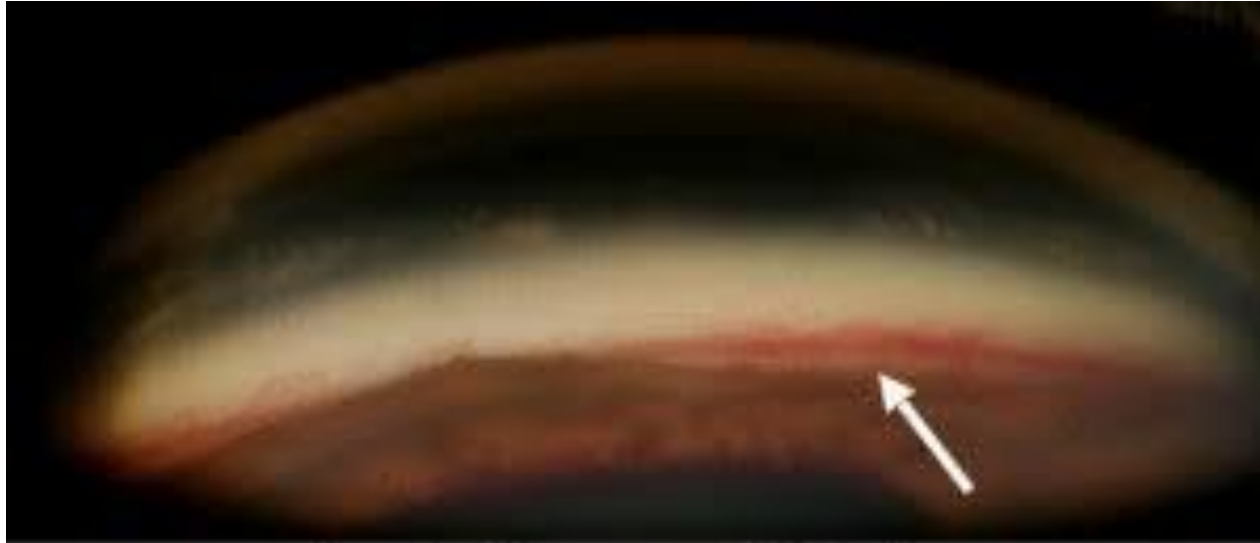
- 1) Primary angle closure glaucoma
- 2) Anterior uveitis
- 3) Iridocorneal endothelial syndrome



# PAS VS PROCESSES

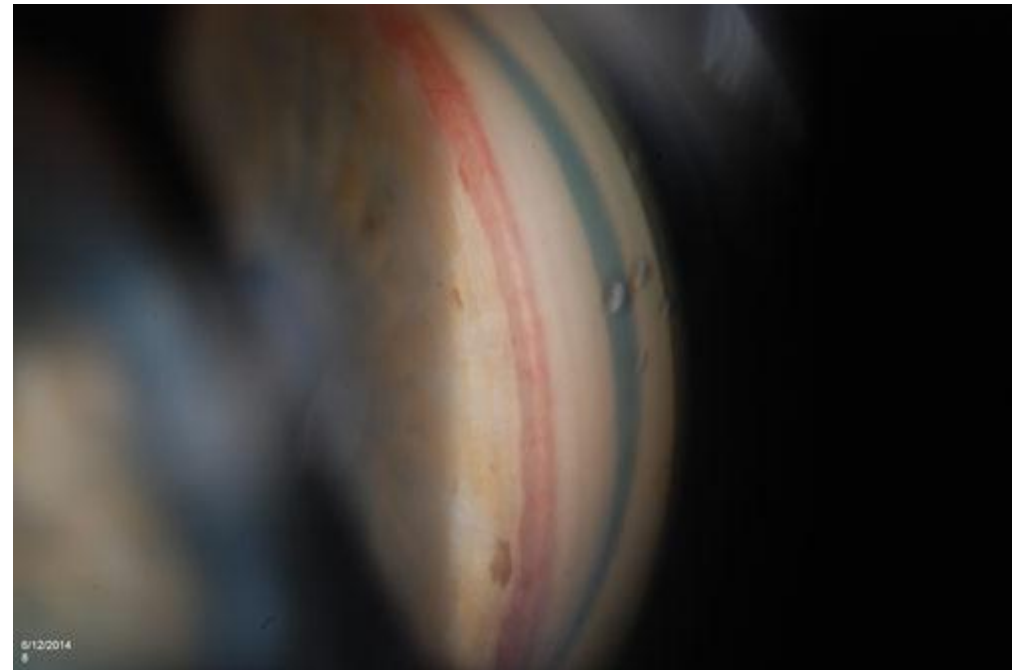


# PATHOLOGICAL FINDINGS

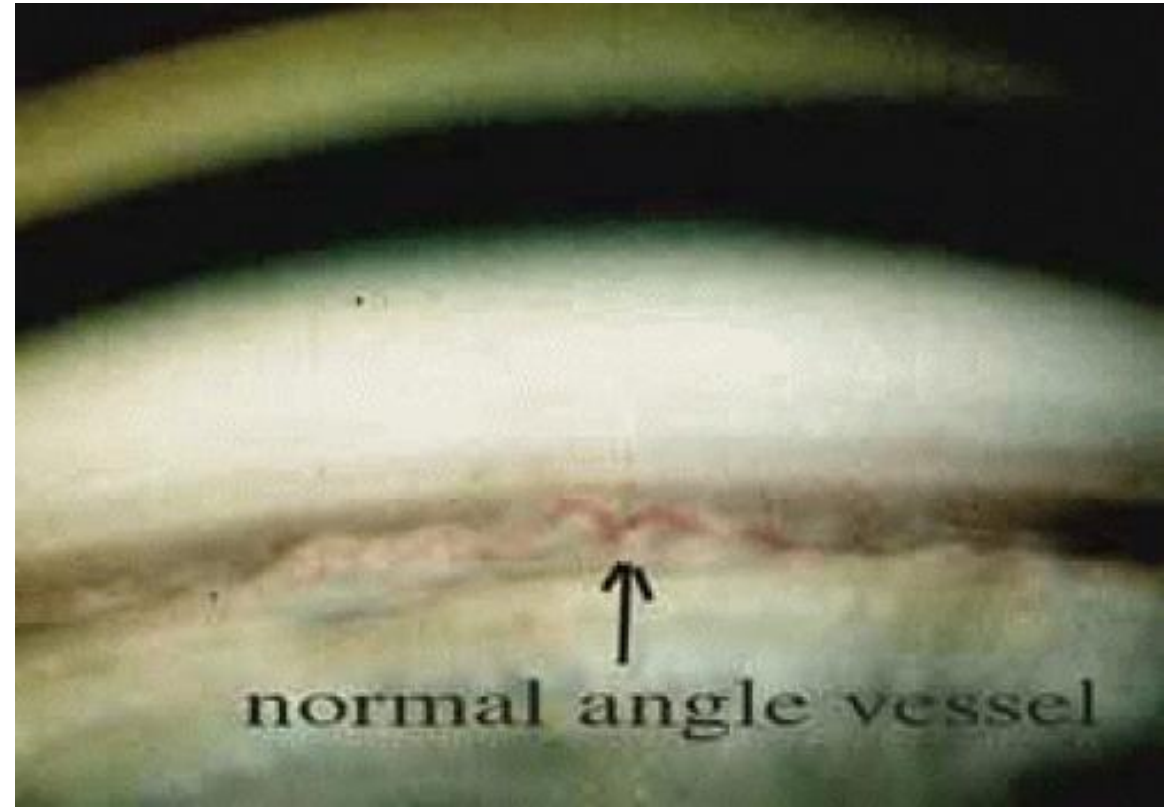
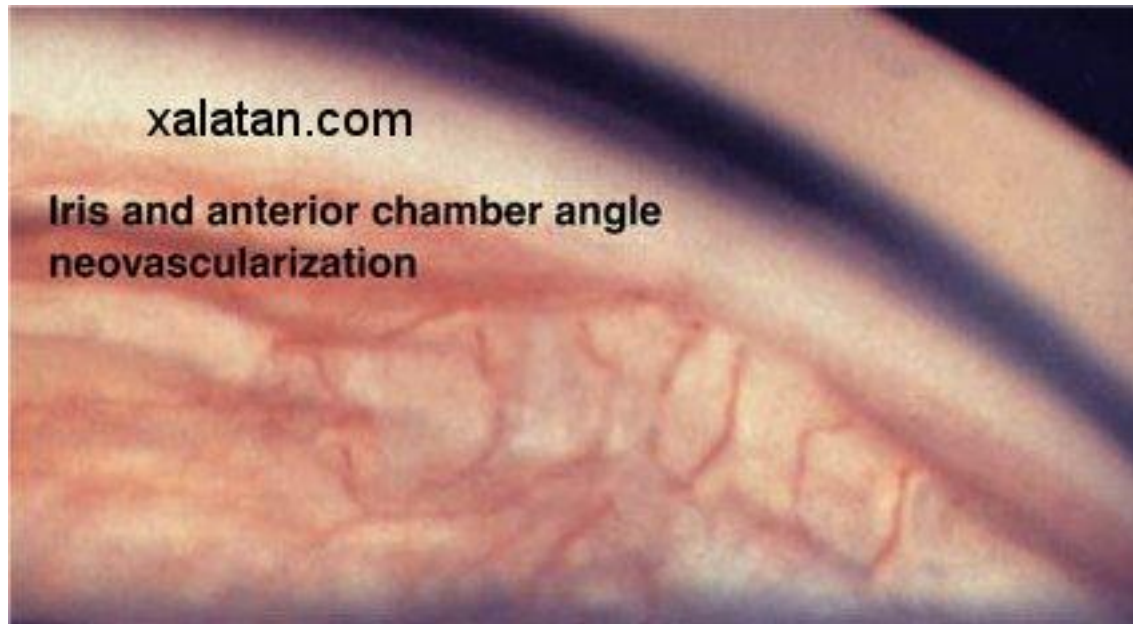


Angle Neovascularization

- 1) Neovascular glaucoma
- 2) Fuchs heterochromic cyclitis
- 3) chronic anterior uveitis



# NEOVASCULARIZATION VS NORMAL VESSELS

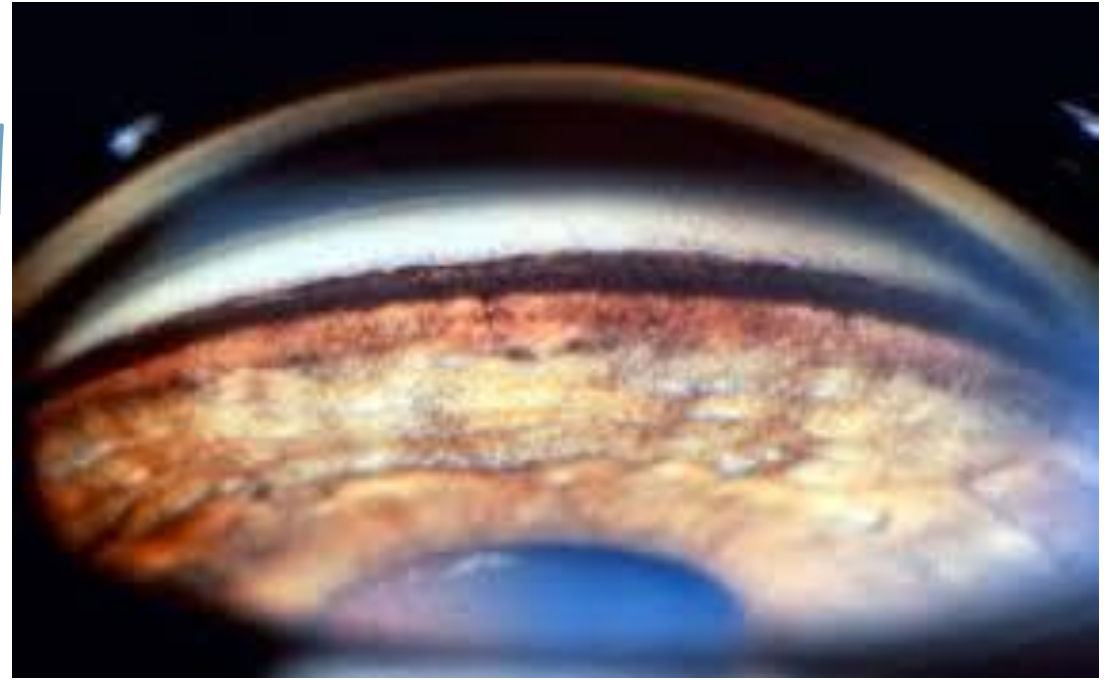




# PATHOLOGICAL FIN

## Hyperpigmentation

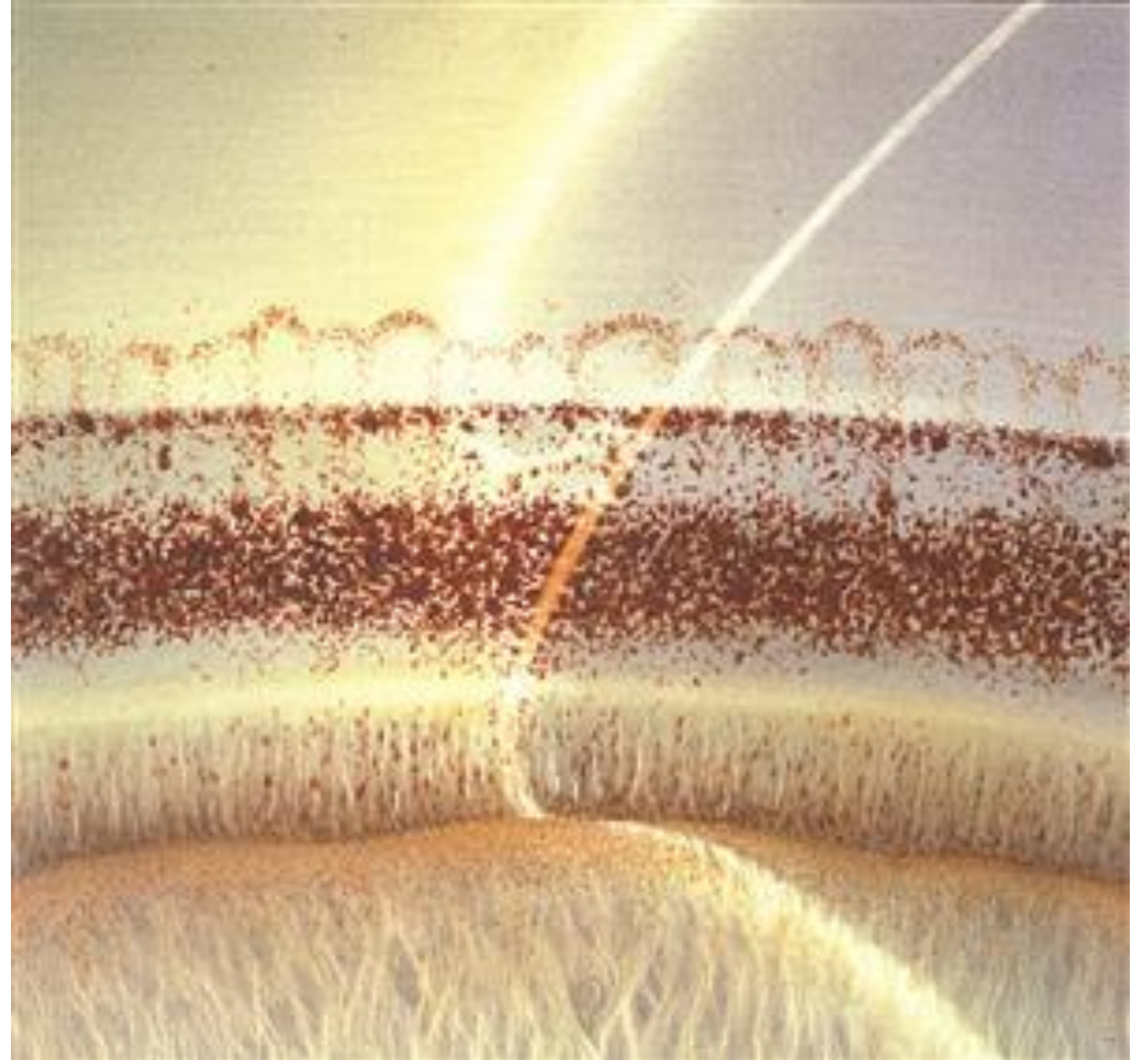
- Physiological
- Pigment dispersion syndrome
- Pseudophakic pigment dispersion
- Pseudoexfoliating syndrome
- Blunt ocular trauma
- Anterior uveitis
- Following AACG
- Following YAG laser iridotomy
- Iris or angle melanoma or naevus
- Naevus of Ota
- Iris pigment epithelial cyst



# HYPERPIGMENTATION



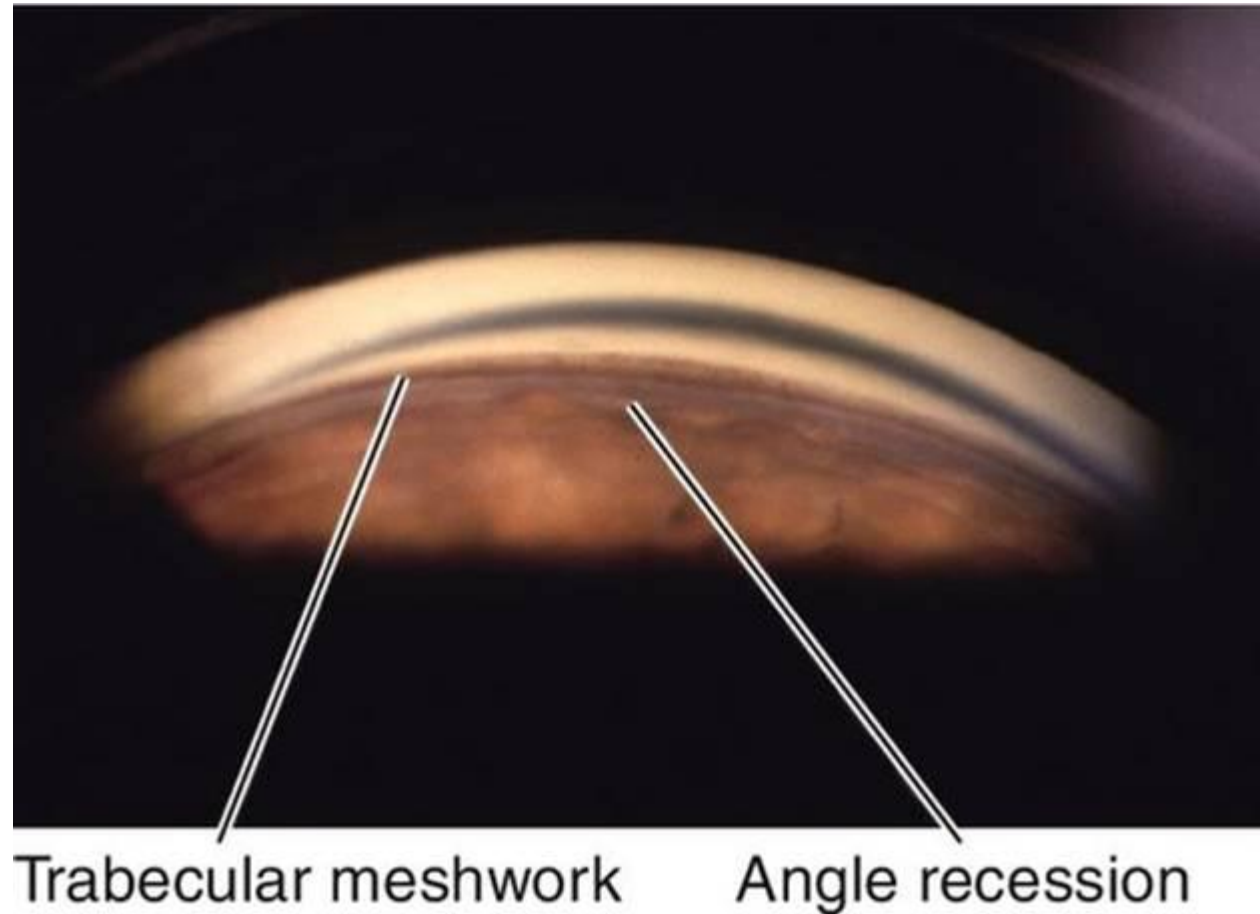
# HYPERPIGMENTATION



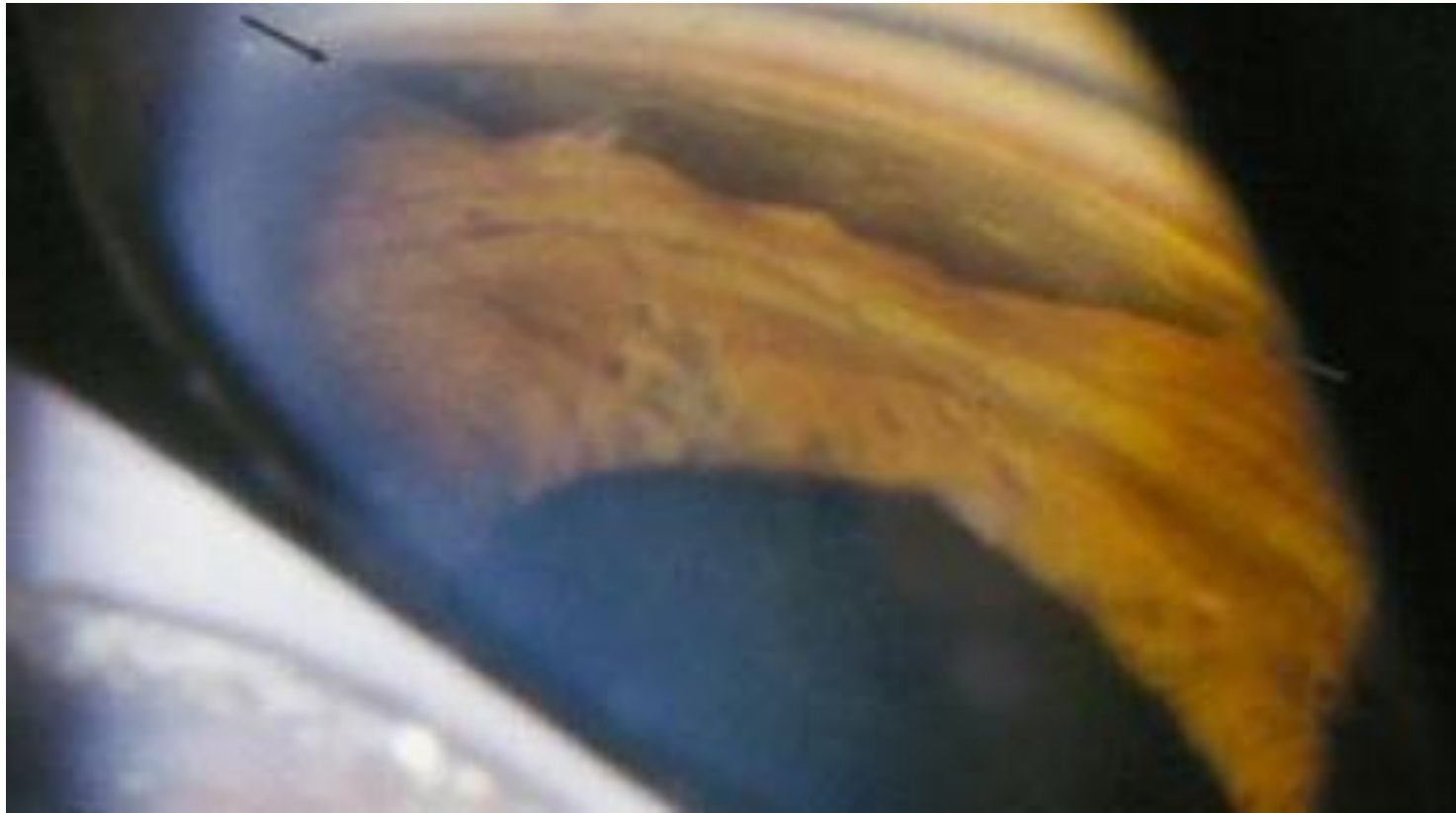
# PATHOLOGICAL FINDINGS

## Trauma

- Angle recession
- Trabecular dialysis
- Cyclodialysis
- Foreign body



# ANGLE RECESS





# PATHOLOGICAL FINDINGS

## Blood in the Schlemm canal

- Physiological
- Struge-weber syndrome
- Carotid-cavernous fistula and Dural shunt
- Obstruction of the superior vena cava



thank  
YOU

The image features the text "thank YOU" centered on a white background. The word "thank" is written in a black, cursive script. The word "YOU" is written in a bold, black, sans-serif font. The text is surrounded by several gold stars of varying sizes and radiating lines, creating a celebratory and appreciative feel.