

Uveitis

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- Anatomy and Physiology
- Aetiopathogenesis
- Clinical features
 - Anterior Uveitis
 - Posterior Uveitis
- Investigations
- Treatment
- Endophthalmitis and Panophthalmitis
- Sympathetic Ophthalmitis

Some bits of information

- Uvea is a highly vascular layer that lines the sclera
- Provides nutrition
- Iris responsible for metabolism of the anterior segment
- Ciliary body produces Aqueous
- Ocular involvement in systemic diseases is due to vascularity of the uvea (immune and Infectious disease)

Brief Anatomy

- Uvea
 - Anterior
 - Iris (free circular diaphragm)
 - Pupil is the aperture in this diaphragm
 - Posterior (Lines the Sclera)
 - Ciliary body
 - Choroid

Iris

- Stroma
 - Connective tissue cells
 - Rich blood supply
 - Blood vessels run radially
 - Its anterior surface has an endothelial layer
 - Posterior surface has a two layers of epithelium
 - Rich sensory nerve supply via the V n
 - Sphincter pupillae (parasympathetic autonomous secretomotor fibers via the III n)
 - Dilator pupillae (cervical Sympathetic chain)

- Epithelium of the iris
 - two layered
 - Anterior non pigmented
 - Posterior Pigmented

Ciliary body

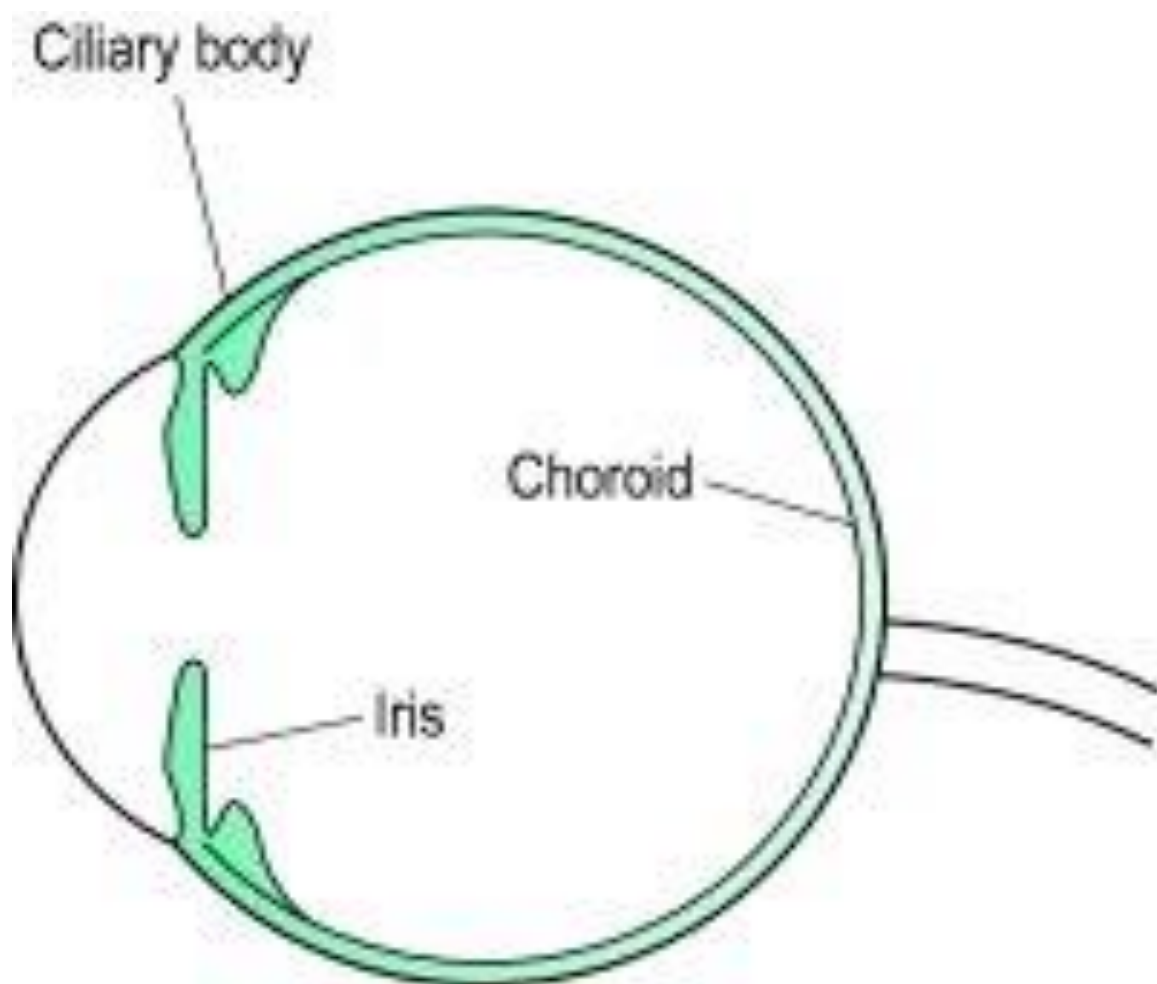
- Mainly composed of muscle fiber
- Shaped like an isosceles triangle with its base forward
- Iris inserts on the middle of the base such that part of the CB is part of the Trabecular meshwork
- Had two parts – Pars Plicata and Pars Plana
- Junction of CB to retina is called the Ora Serrata.

Choroid

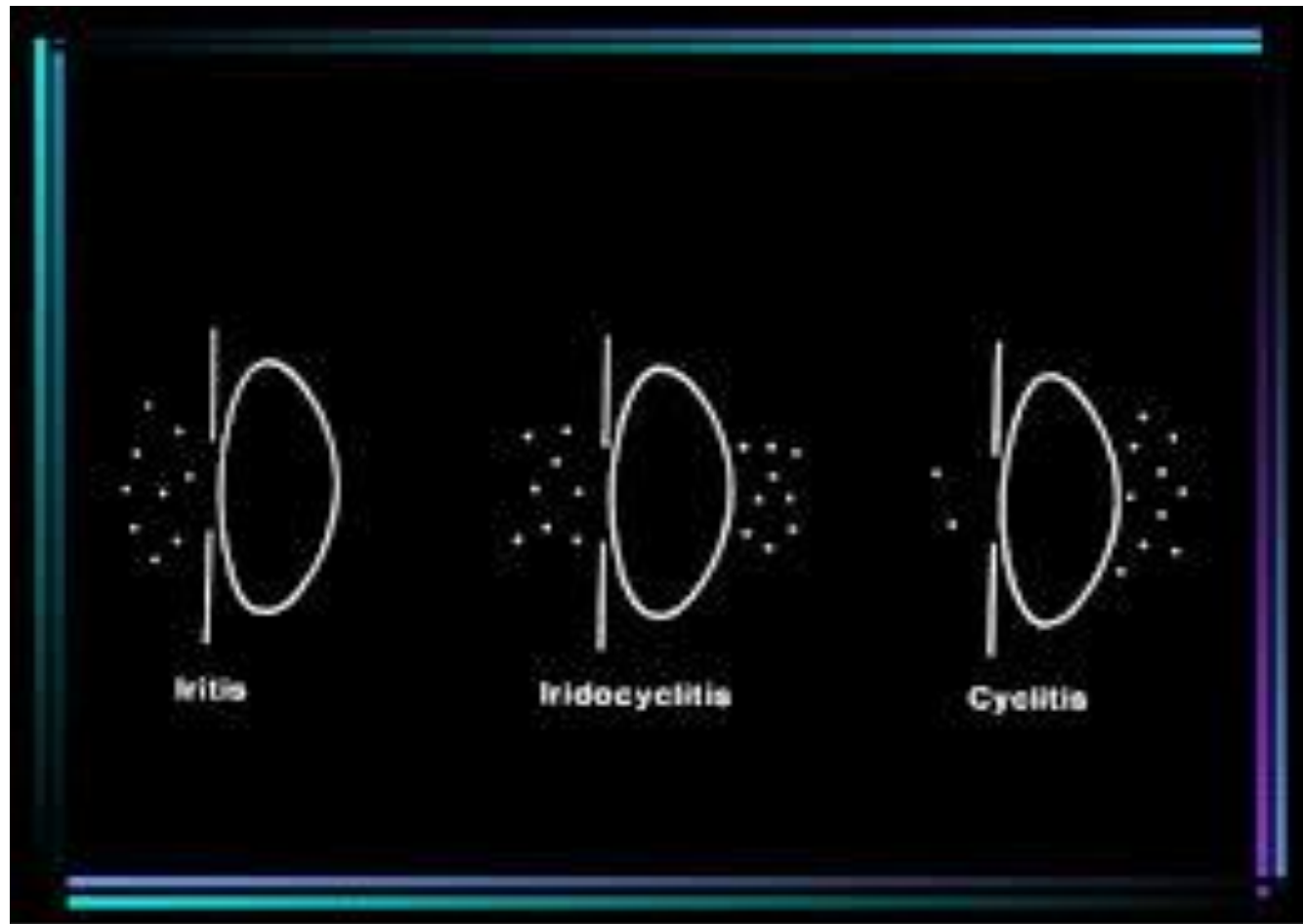
- *Extremely vascular*
- Lines the sclera but not firmly adherent so has potential space – epichoroidal and *suprachoroidal space*
- Has a thin elastic membrane on the inner aspect – *Bruch's Membrane*
- Caliber of blood vessels increases from inside out
- Sensory nerve supply is from the V nerve

Based on anatomical Site

Anterior Uveitis	Intermediate Uveitis	Posterior Uveitis	Panuveitis
Iritis	Posterior cyclitis	Choroiditis	
Anterior cyclitis	Pars Planitis	Chorioretinitis	
Iridocyclitis	Hyalitis	Retinichoroiditis	
	Basal retinichoroiditis	Neuroretinitis	



Cells only in AC
Cells in both AC and Vitreous cavity
More cells in vitreous Cavity



Based on Aetiology

- Idiopathic
- Infectious
- Immune related
- Traumatic
- Neoplastic

Based on Onset

- Acute
- Sub acute
- Chronic
- Recurrent

Based on pathology

- Granulomatous
- Non Granulomatous

Aetiopathogenesis of inflammatory uveitis

- Infective exogenous
- Infective endogenous
- Secondary infections
- Immune related
 - Auto immune
 - HLA associated eg HLA B 27 associated ankylosis spondylitis

Neoplastic

- RB, uveal melanoma, reticulum cell sarcoma
- Systemic malignancies eg, leukaemias and lymphoma's
- Present with various types of uveitis and are termed Masquerade syndrome

Traumatic

- Blunt or penetrating trauma
- Post operative – cataract surgery, trabeculectomy, VR surgery
- Post op uveitis needs to be differentiated from post op infective endophthalmitis
 - And treated as endoph if in doubt!!!

Clinical features

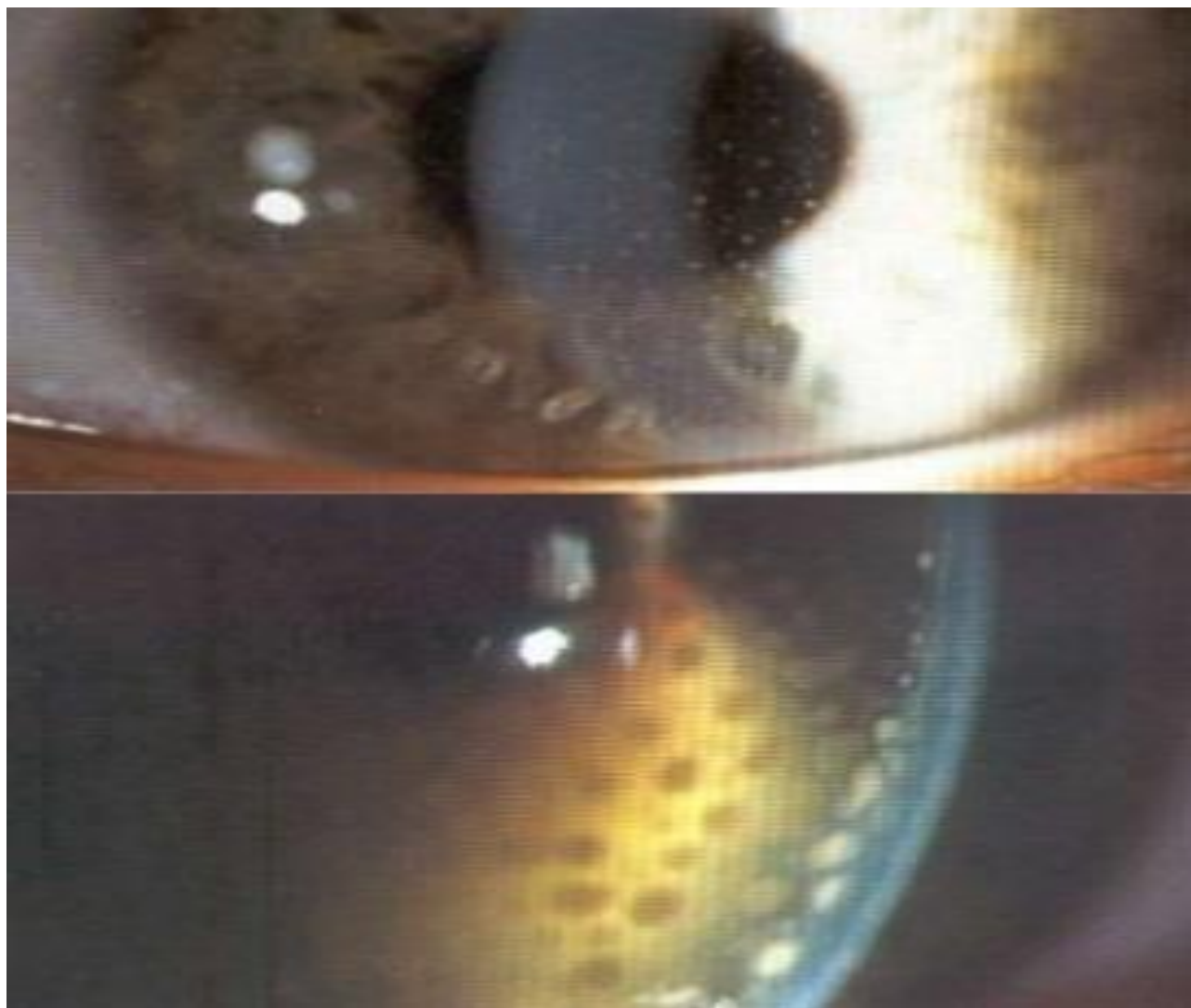
- Symptoms
 - Blurred vision
 - Redeye
 - Pain
 - Intolerance to light
- Signs
 - Muddy iris
 - Sluggish constricted pupil
 - Aqueous cells and flare
 - KP's
 - Posterior synechia
 - Seclussio pupil
 - Occlusio pupil
 - CCC
 - Photophobia
 - tenderness

Iritis

- Iris Inflammation
 - Dilatation of its vessels and increased capillary permeability
 - Exudation of protein rich fluid
 - With leucocytes and lymphocyte
- Unusually large amount of fluid cause the iris to swell and become water logged with impairment of its movement
- Clear and defined iris pattern becomes blurred and indistinct and results in the *muddy iris*
- Extravasated fluid has irritants which make the muscle fibers contract
- Spinchter being the stronger muscle over comes the dilator and the pupil becomes constricted
- So, you get a *sluggish constricted pupil* in iritis

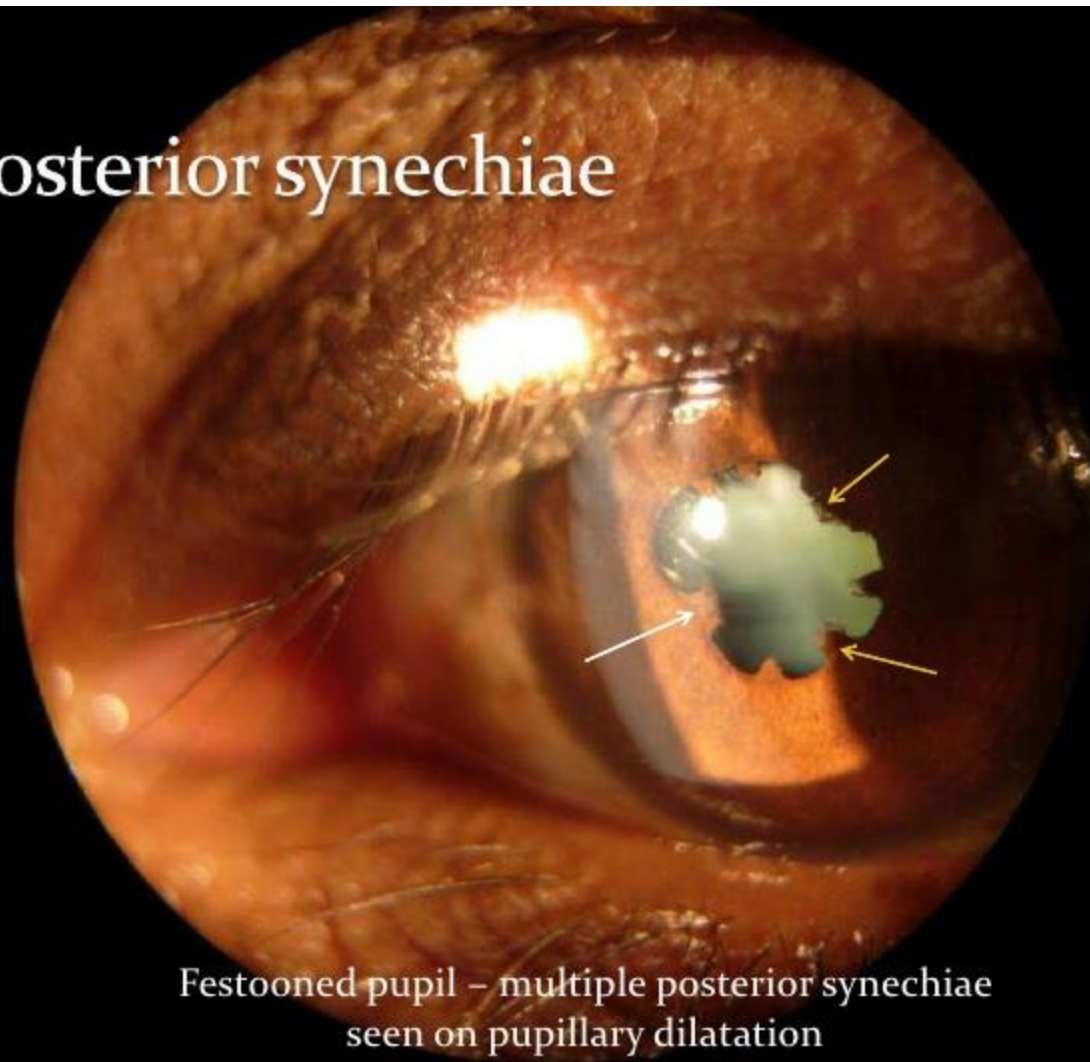
- Pain
 - Iris is supplied by the ophthalmic div of the V cranial nerve
 - Pain, typically worse at night, can be local or referred to other divisions of the V n
- Hyperemia or Circumciliary congestion
 - More if ciliary body is involved

- Cells, flare, KP's and synechiae
 - Protein rich albuminous fluid enters the AC
 - Aqueous becomes plasmoid with leucocytes, coagulated protein flakes and fibrin
 - Normally clear Aqueous is now hazy – forming a hazy '*Flare*' in the beam of the slit lamp
 - In very intense cases PMN leucocytes settle in the Ac to form a *hypopyon (sterile)*
 - Simultaneously corneal nutrition suffers and the endothelium becomes sticky
 - Exudative cells stick to endothelium and cause *Keratic Precipitates*

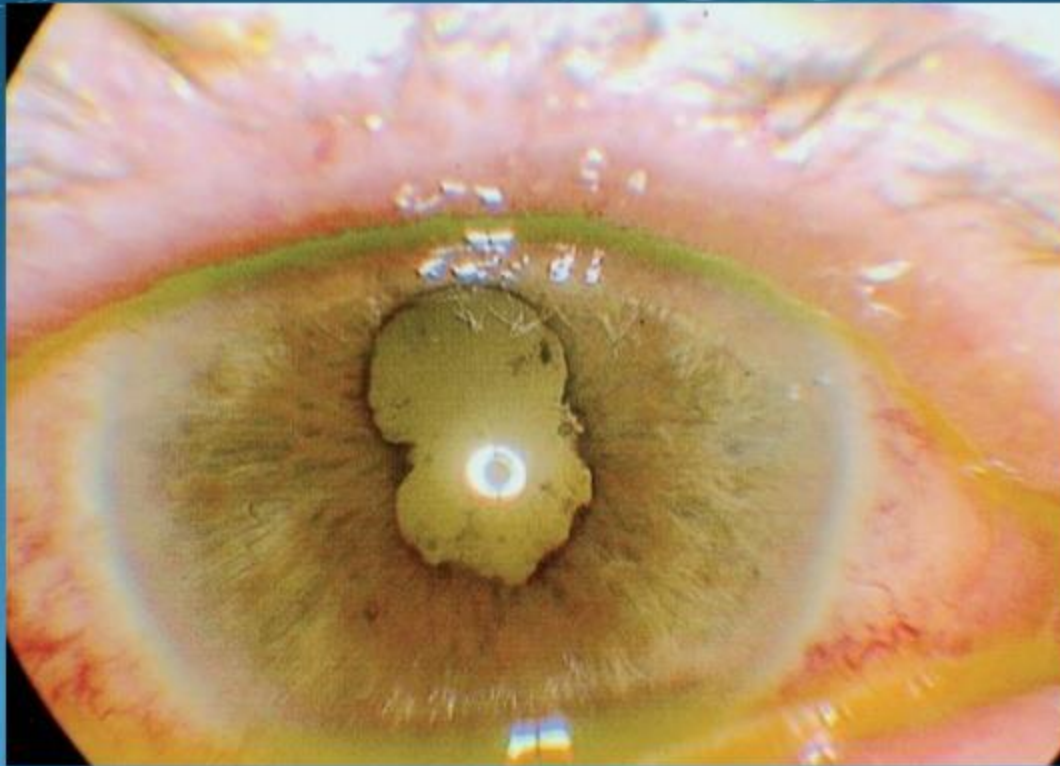


- Sometimes the exudate forms a thin membrane over the iris and pupillary area
- Iris sticks down to the anterior capsule of the lens
- If the pupil is dilated at this point the iris is freed
 - (You can then you see iris pigment on the AC)
- If these adhesions are allowed to form and become fibrous they result in the pupillary margin sticking to the ant capsule- *posterior synechiae*
 - *These do not break easily on dilatation of the pupil.*
 - *a dilating drop will causes intervening non stuck part of the pupillary margin dilates and one sees a festooned pupil*

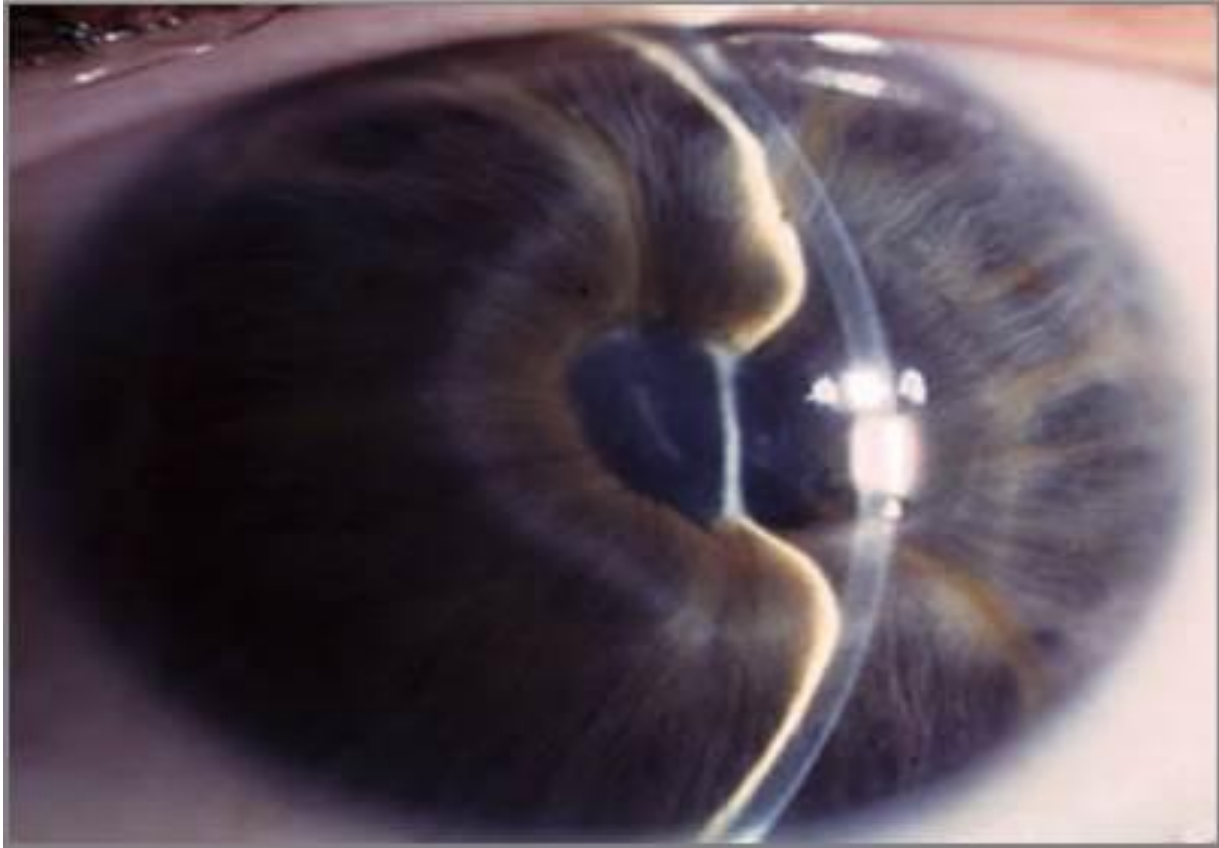
Posterior synechiae

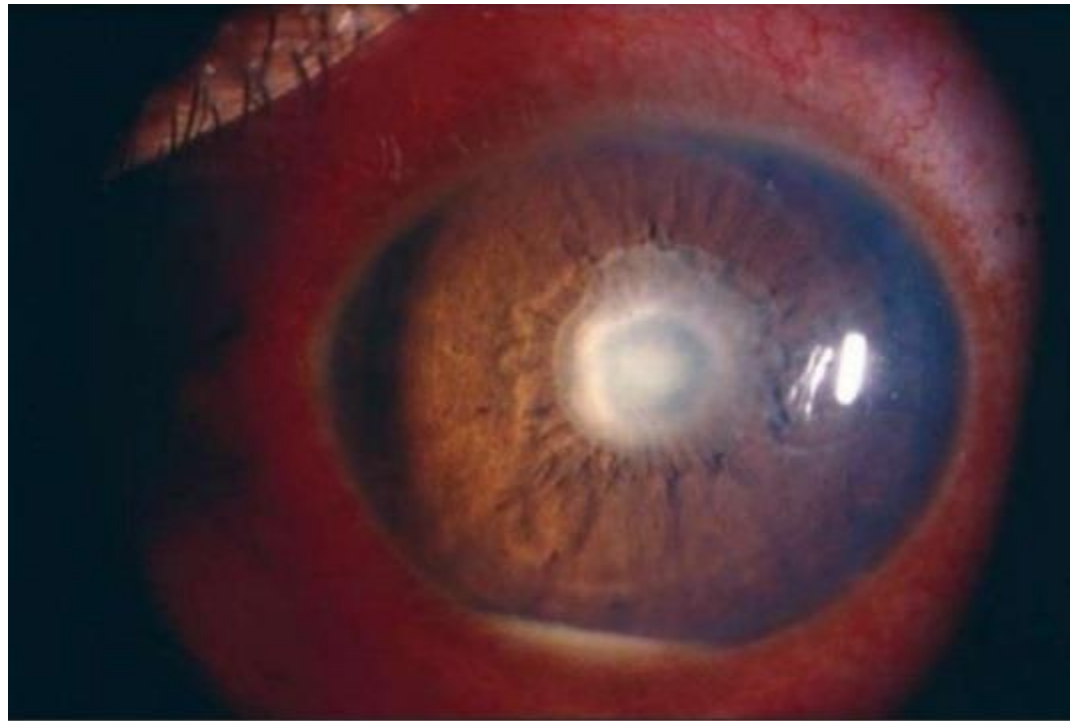


Festooned pupil – multiple posterior synechiae
seen on pupillary dilatation



- In cases of recurrent or severe episodes the entire 360 degrees of the pupil margin is stuck down to the ant capsule – *seclusio pupillae* or *ring synechiae*
- If unrelieved, leads to secondary angle closure glaucoma
 - *Aqueous formed in the posterior chamber is unable to move to the anterior chamber given the seclusio*
 - *This results in forward bowing of the iris (iris bombe)*
 - *Blocking the angle*
 - *Ultimately this apposition causes iris adhesions across the angle - peripheral synechiae!*





- Further exudation causes a layer of fibrin to be laid down in the pupillary area causing - Occlusio Pupillae
- In very late stages degenerative changes of the CB causes a shutdown
 - Little or no aqueous is produced
 - vitreous liquifies
 - Lens and cornea become opaque (lack of nutrition)
 - Eye becomes pthisical

Hypotony – phthisis bulbi (LE)



What happens to the IOP

- Early or active stages it rises
- Sticky fibrinous aqueous finds it difficult to drain out
- Iris bombe causes very high IOPs
- Later, however as the CB shuts down and hypotony sets in (not a good sign)

Cyclitis and Chronic iridocyclitis

- KPs
- Dust like opacities in the vitreous
- Cyclitic membranes
- Hypotony
- Pthisis

Intermediate Uveitis

- Also known as Pars planitis
- Easily missed
- Children and young adults
- Women more than men
- Bilateral in 80% of cases
- Clinical features
 - Retinal periphlebitis
 - Vitreous exudates and opacities
 - Minimal KP's
 - 'Snowbank' at the ora serrata
 - Mostly resolve spontaneously
- Symptoms
 - Floaters and gradual progressive decrease in vision

Posterior Uveitis

- Choroiditis
 - Diffuse
 - Small areas of inflammation scattered over the fundus
 - Mainly anterior to the equator
 - Acute or chronic (atrophic patches)
 - Multifocal
 - Generally go undiagnosed
 - Few lesions
 - Also called anterior choroiditis
 - Central
 - Affecting the posterior pole
 - Juxtapapillary choroiditis of Jensen
 - Young people
 - Present with a sector shaped VF defect
- Retinochoroiditis
- Chorioretinitis

Posterior Uveitis

- Isolated or diffuse
- Retina generally involved
- Symptoms
 - Floaters
 - Reduction in vision, often painless
 - Scotoma's Positive /negative
 - Very occasionally – pain and redness
 - Metamorphopsia – micro or macro
 - Photopsia
 - Positive scotoma/negative scotoma
- Signs
 - Opacities in the vitreous
 - Exudate on the retina/choroid
 - Sheathing of retinal vessels
 - Spill over ant uveitis
 - Occasionally disc odema and haemorrhage
 - Complications – complicated cataract, glaucoma, CNVM

Investigations

- Non granulomatous Uveitis
 - Unilateral, single episode, AAU
 - No investigation
 - Posterior
 - Bilateral
 - Recurrent
 - Granulomatous
 - FBC
 - ESR
 - HLA B 27
 - ACE
 - ANA
 - RPR
 - VDRL
 - FTA ABS
 - Chest Xray

Treatment

- Topical
 - Cycloplegics
 - Keep iris and CB at rest (reduces Pain)
 - Prevent Post syn formation
 - Break any formed PS
 - Steroids
 - Topical
 - Subtenons
 - Oral
 - When using steroids be cautious of increased IOP and formation of cataracts
- Systemic
 - Steroids
 - Immunosuppressive agents
 - Methotrexate
 - Cyclosporin
 - Cyclophosphamide
- Specific treatments
 - TB
 - Syphilis
 - Lens induced uveitis
 - Behcets
 - Reiter's syn {chlamydial (tetracyclines)}

Endophthalmitis

- Intraocular inflammation that predominantly affects the inner spaces of the eyes and its contents
- Panophthalmitis involves the whole eye
- Organisms causing Exogenous Endophthalmitis
 - Bacterial
 - Pneumococci
 - Staphylococci
 - Bacillus cereus
 - E Coli
 - Pseudomonas
 - Clostridium welchi
 - **Propionbacterium acnes** (low grade recurring endoph or late post cataract endoph)
 - Fungal

- Endogenous Endophthalmitis
 - Metastatic
 - AIDS
 - Immunosuppressed
 - Debilitated pts with Diabetic ketoacidosis
 - Septicaemias

- Symptoms
 - Pain
 - Lid swelling
 - Decrease in vision
 - Fever
 - Headaches
 - Vomiting
- The last three are suggestive of panophthalmitis or endogenous endophthalmitis

- Chemosis
- Hypopyon
- Vitreous exudates
- Yellow fundal glow
- Cloudy cornea with corneal infiltrate
- Proptosis (Panophthalmitis)
- Limitation of ocular movt (Panoph)

Investigations

- History
- Blood tests
- Aqueous tap/vitreous tap
- B scan

Treatment

- Admit
- Hourly examination
- Detailed systemic history and investigations (unless clearly post cataract endoph)
- Intravitreal antibiotics
 - Ceftazidime (2.25 mg)
 - Vancomycin(1000ug)
 - Amikacin/gentamycin (less preferred)
 - Amphotericin 5ug in 0.1ml (if fungal)
- Intravitreal steroids (dexa)
 - 0.4mg in 0.1ml
- Vitrectomy

- If VA $\geq$ HMCF
 - Do a vit tap and proceed with intravitreal antibiotics
- If VA PL +
 - Take up fro tap with vitrectomy and intravitreal antibiotics
- If PL –
 - No surgical intervention
 - Can try intravitreal antibiotics
 - Consider evisceration if panophthalmitis

Other types

- Bacterial
 - TB
 - Iritis
 - choroiditis
 - Leprosy
 - Brucellosis
 - Lyme disease
- Spirochaetal
 - Syphilis
 - Keratitis
 - Iritis
 - Choroiditis
- Leptospirosis
- Viral
 - ARN
 - CMV retinitis
 - AIDS related
 - Measles
- Fungal
 - Ocular histoplasmosis
- Parasitic
 - Toxoplasmosis
 - Onchocerciasis
- Immunological
 - AS
 - Reiter's
 - Behcet's
 - JCA
- Sympathetic Ophthalmitis