
بِسْمِ اللَّهِ الرَّحْمَٰنِ الرَّحِيمِ

Scenario

- A pt age 50 yrs comes to eye with redness, foreign body sensation in Rt eye for the last so many times. On examination there is a red lesion near his medial canthus Rt eye. His vision is 6/12 & 6/6 in Rt & Lt eye respectively.
- What is the most probable cause.?
- A Allergic Conjunctivitis
- B Marginal keratitis
- C Pterygium
- D Phlyctenule

Pterygium

Dr Nazullah

Associate professor

Ophthalmology KGMC/HMC

Pterygium

- It can be defined as triangular conjunctival fibrovascular tissue over riding/overgrows the cornea
- It is a degenerative condition of the conjunctiva
- Usually occurs in the interpalpebral fissure
- Nasal is the common site

Aetiology

- Exactly is not known
- Probable Can be
- Drying of this area is the primary theory
- Ultraviolet radiation and damage of the corneal epithelium, bowman membrane and the underlying stroma
- The following conditions can precipitate
- Chronic conjunctivitis
- Dusty environment

Mechanism

- It’s a degenerative , inflammatory & hyperplastic condition
- Sub-conjunctival tissue undergoes elastotic degeneration & proliferate as vascularized granulation tissue , under the epithelium, which ultimately encroaches the cornea
- Corneal epithelium, bowman membrane and underlying stroma are damaged.
- So simultaneous changes occur in conjunctiva & cornea

Types of pterygium

- Progressive type; It is a thick vascularized fleshy tissue with infilterate at the anterior end called the Cap. It progresses with time.
- Stationary type; its not progresses with time & remains in the same stage
- Regressive type; in this condition the tissue is very thin , atrophic & with very little vascularity almost avascular
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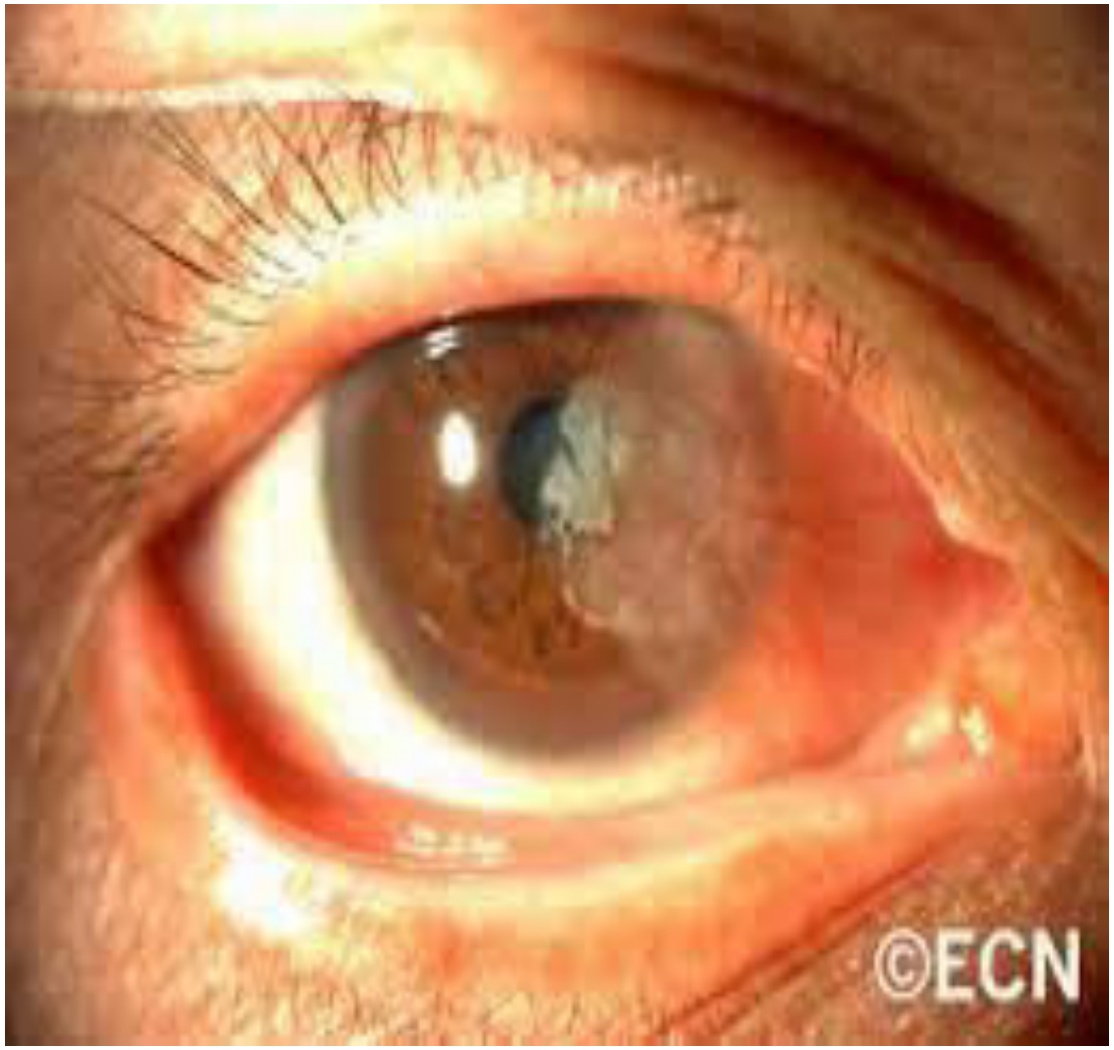
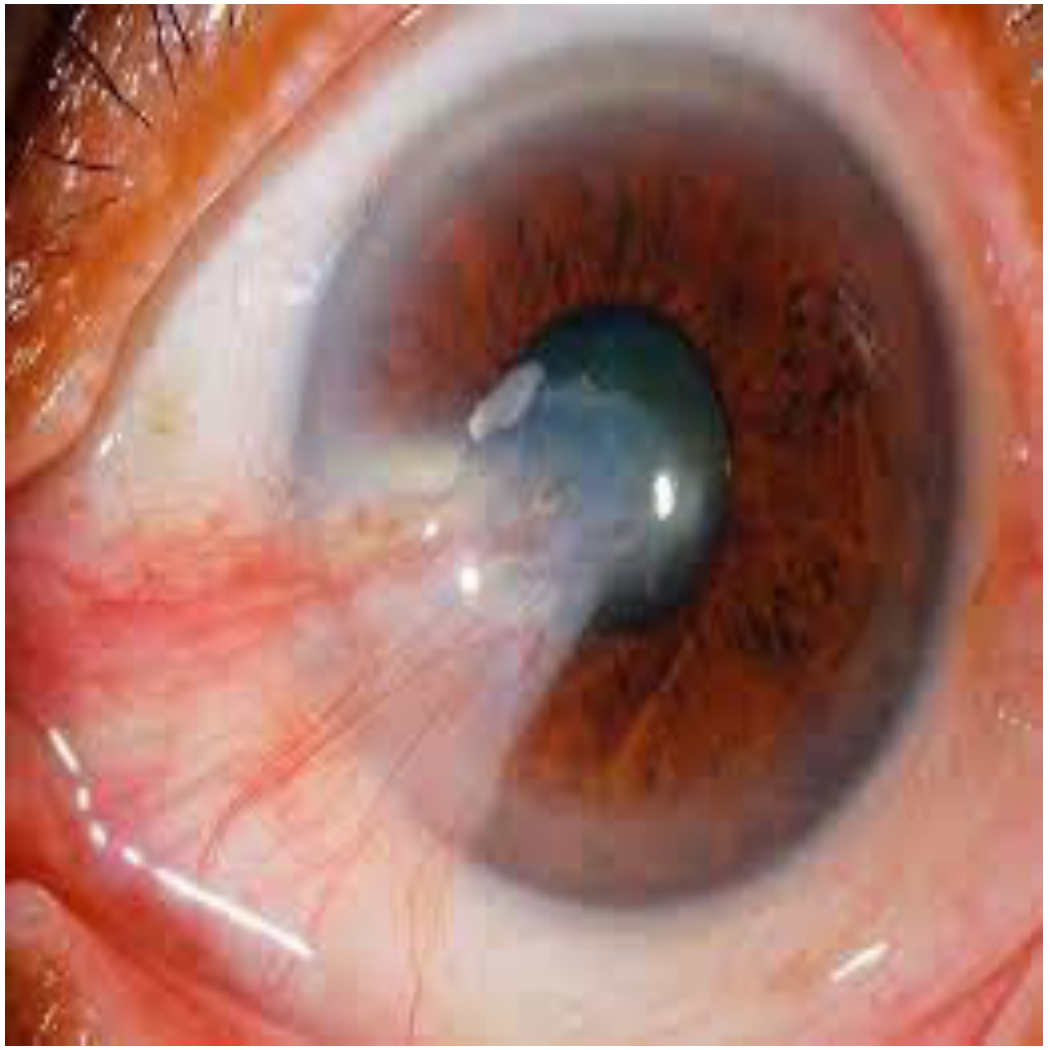
Progressive





Regressive

Stages of pterygium

Stage 0: This stage is when the lesion is posterior to the limbus (border of the cornea that is contact with the white of the eye (sclera)), specifically called pinguecula.
A pinguecula is a yellowish patch or bump on the conjunctiva that occurs due to a deposition of protein, fat or calcium on the tissue.
In this case there is no vascularity and conjunctival and corneal ectasia are seen.

- **Stage 1:** In this the lesion involves limbus. Minimal papillary response is seen and conjunctival and corneal tissues are flat.
- Extends upto 1mm
- **Stage 2:** In this stage the lesion appears just on the limbus. The vascularity is normal but a minimal elevation is observed on conjunctival and corneal tissues. 1-2mm

- **Stage 3:** The pterygium covers the area between the limbus and pupillary margin. Moderate vascularity with vessel congestion is seen and the lesion Extends upto 4mm.
- May cause astigmatism
- **Stage 4:** In this case the lesion is central to the pupillary margin. It extends to more than 4 mm. This is a severe form of pterygium with vessel congestion and dilation. It is of dense and deep color and may involve areas of vision (visual axis).
- This is associated with increase in astigmatism and can even lead to vision problem & eye movement.

Difference between

	Progessive pterygium	Atrophic pterygium
Appearance	Thick and fleshy	Thin and membranous
Blood vessels	Very prominent	Very few blood vesssels giving a pale appearance
Cap in front of the head	Present	Absent
Progression	Continues to advance further into the cornea	Static after an initial period of growth

Parts of the pterygium

- A pterygium appears as a wing shaped growth on the visible part of the sclera in the horizontal meridian, which is seen to be invading into the adjacent cornea. The color depends on the degree of prominence of blood vessels - it may be red, thick and fleshy in a progressive pterygium, and pale, thin and membranous in an atrophic pterygium.
- A line of iron deposition known as Stocker’s line is often seen in front of the head of long standing pterygia.
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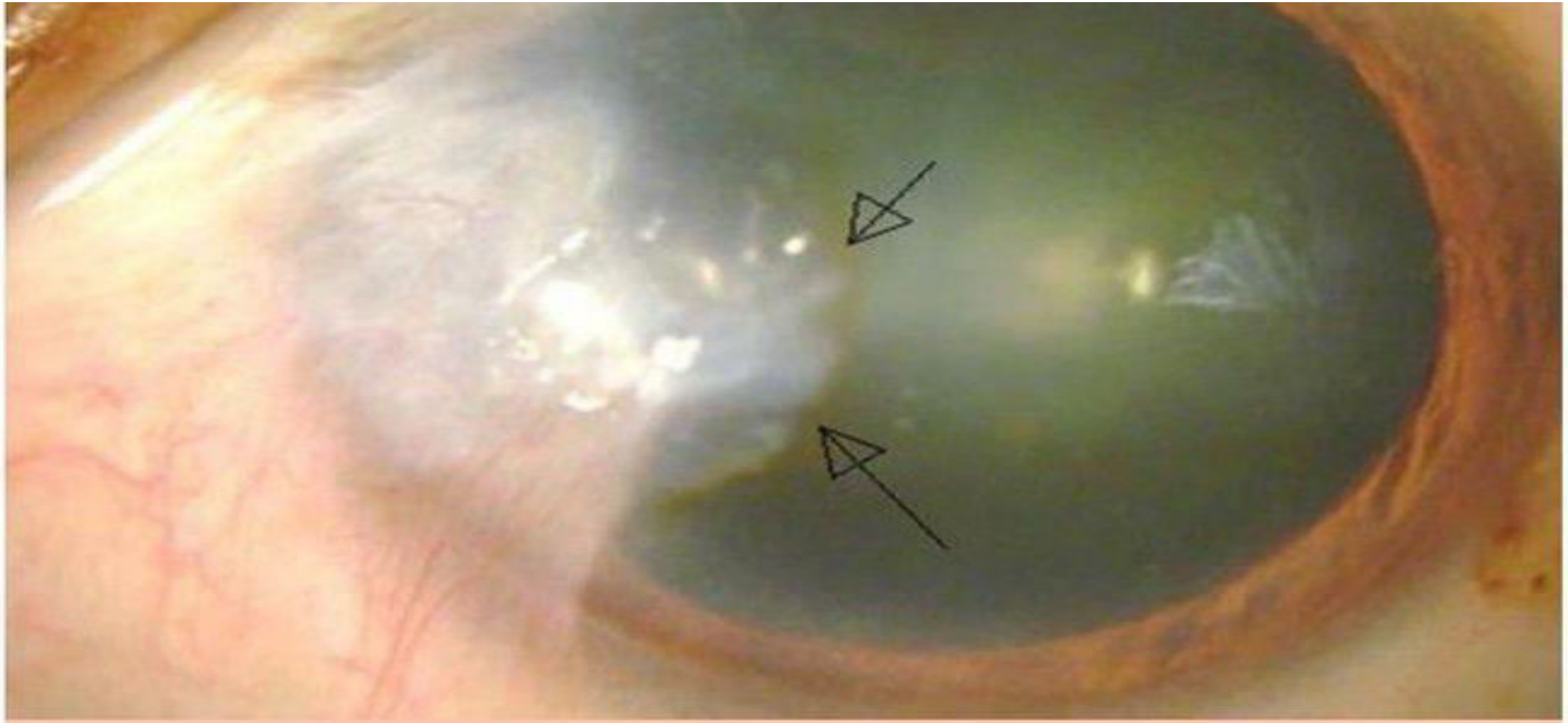
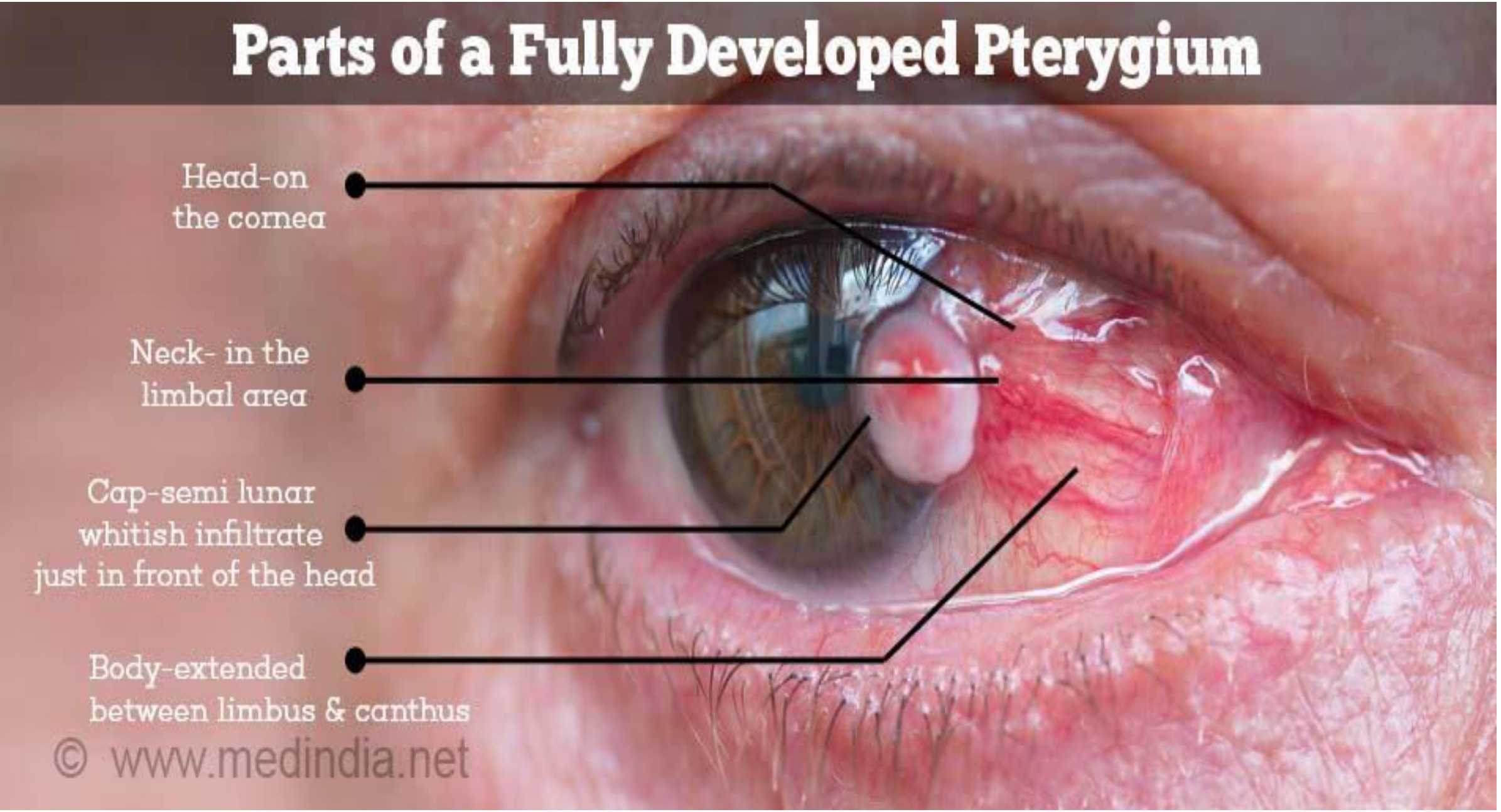


Stocker's Line. Iron deposition line in the corneal epithelium, located at the corneal leading edge of a pterygium.

Parts contd

- Head: Part of the pterygium in the cornea
- Cap: opaque infiltration seen in front of the head of progressive pterygia
- Stocker’s line - A line of iron deposition adjacent to the head of the pterygium. It appears in case of chronic pterygium.
- Neck: the part that overlies the junction between the cornea and sclera
- Body: the part that lies in the conjunctiva overlying the sclera


Parts of a Fully Developed Pterygium
Head-on the cornea
Neck- in the limbal area
Cap-semi lunar whitish infiltrate just in front of the head
Body-extended between limbus & canthus
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Clinical features

- With Irritation, redness, foreign body sensation
- Typically develops in hot, windy & dry climates
- Asymptomatic In early stages
- More common nasal side than on temporal side
- Appears as fibrovascular wing shape lesion grows in the limbus with apex towards the cornea
- Diminished vision - Either due to the growth altering the shape of the cornea producing astigmatism, or due to obstruction of the visual axis.
- Diplopia may be due to limitation of movement

- Usually pterygium is asymptomatic apart from its appearance.
- Sometimes a pterygium can give rise to the following symptoms -
- **Dryness, grittiness or foreign body sensation -** Due to rapid tear evaporation because of an uneven ocular surface.
- **Redness and pain -** If the pterygium is inflamed.
- **Diplopia -** This is very rare, and occurs in very large recurrent ptergia due to restriction of ocular movments.
-

Treatment

- Non surgical

- Surgical

Non surgical

- Tear substitute to control the dryness
- Topical steroid for inflammation
- Sunglasses to avoid sun & ultraviolet exposure

Surgical

- Indication are
- Optical for visual restoration, due to Astigmatism and or mechanical obstruction of visual axis
- Cosmetics somebody may feel cosmetic problem
- Irritation & redness

Different procedures

- Bare sclera; with simple excision with 80% recurrence rate
- To prevent recurrence
- Simple excision with mitomycin-C
- Excision with conjunctival auto-graft
- Excision with amniotic membrane graft
- Laser with Argon laser
- Radiation with Beta rays

Surgical Complication

- Recurrence is the common problem
- So to prevent it

Conjunctival autograft

- This method might not be necessary in every case, but it's the least likely to lead to recurrence. It's also the technique I perform most often.
- To perform a conjunctival autograft, first measure the conjunctival epithelial defect and how much bare sclera you need to cover. Then, harvest the conjunctiva approximately 90 degrees or 3 to 4 clock hours away from the resected site, usually in the superior globe, with Wescott scissors. Dissect the conjunctiva free from the underlying Tenon's capsule to an extent that matches the surface area of the pterygium.

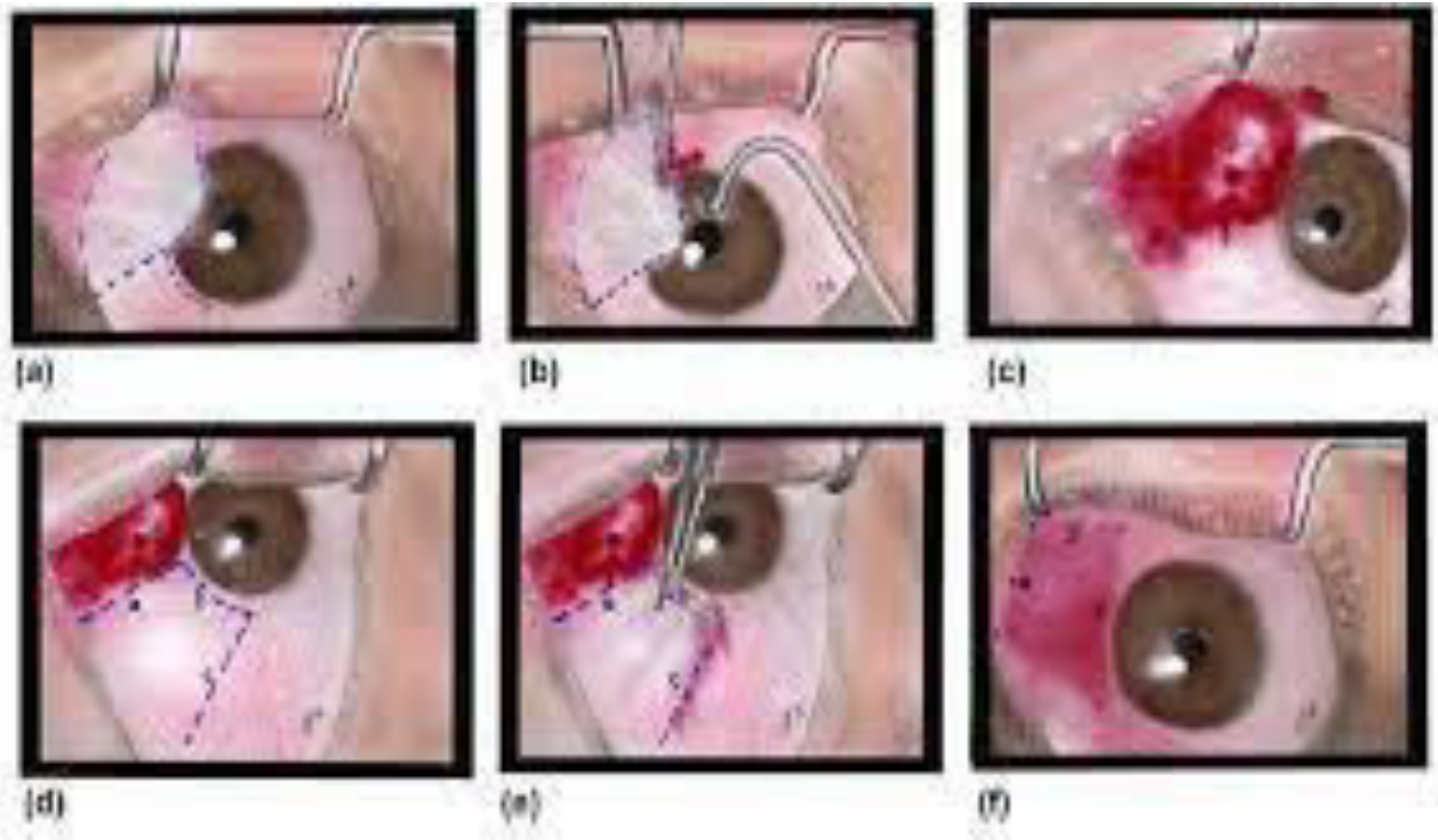
- Glue or suture the flap to the bed with 8-0 vicryl. If using glue, aim for as little glue as possible. Postoperatively, prescribe topical antibiotic drops such as fluoroquinolone q.i.d. for a week, and a steroid drop such as prednisolone acetate q.i.d., tapered over one to three months.

- Recurrence the least one

Amniotic membrane transplant

Amniotic membrane, which can be placed and glued or sutured over the area of the defect, is a very effective method. We prefer to use glue, since it’s fast and simple. Amniotic membrane makes patients more comfortable and contributes to the healing of the tissue. However, it’s not quite as effective in discouraging recurrence as the third option.

Recurrence is low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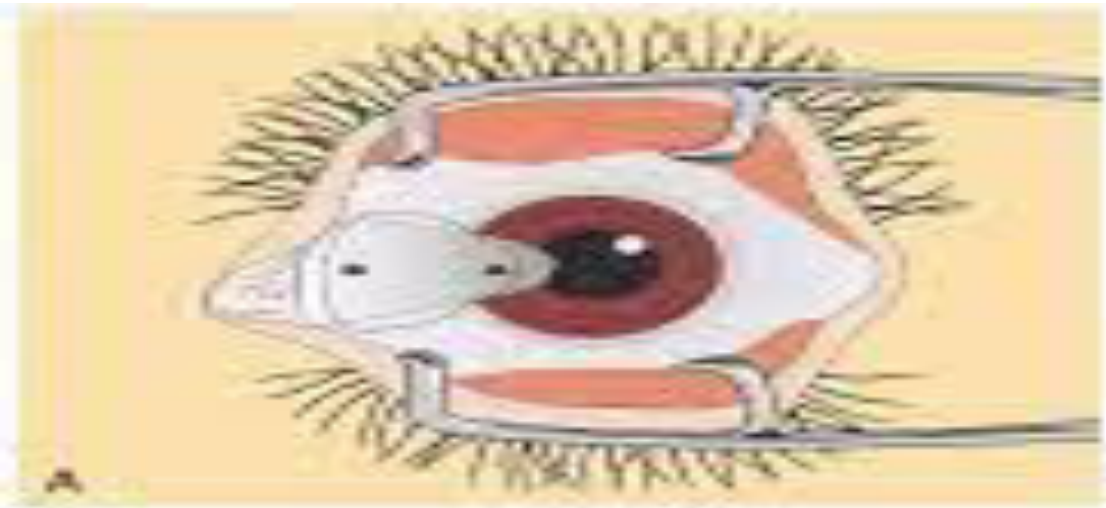
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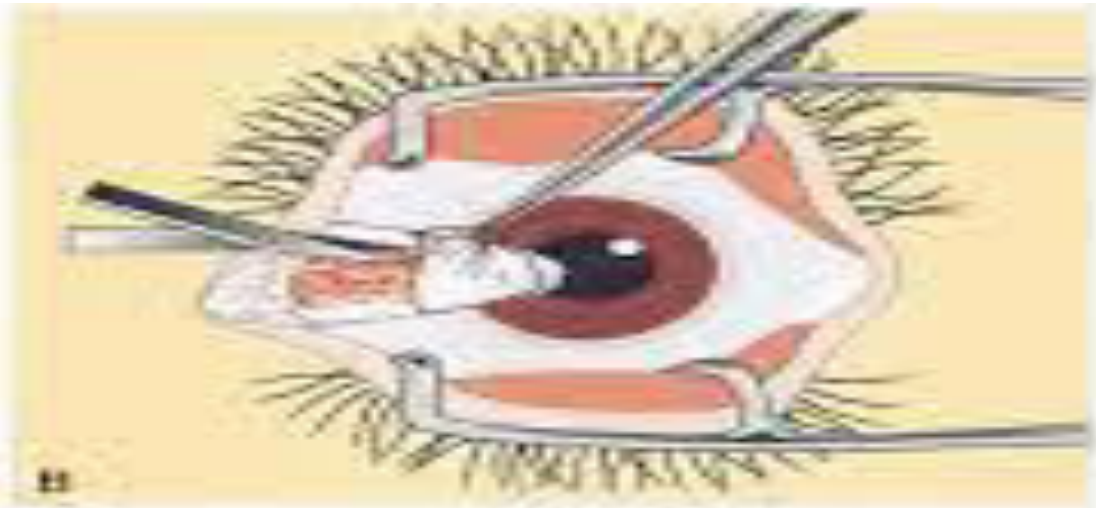
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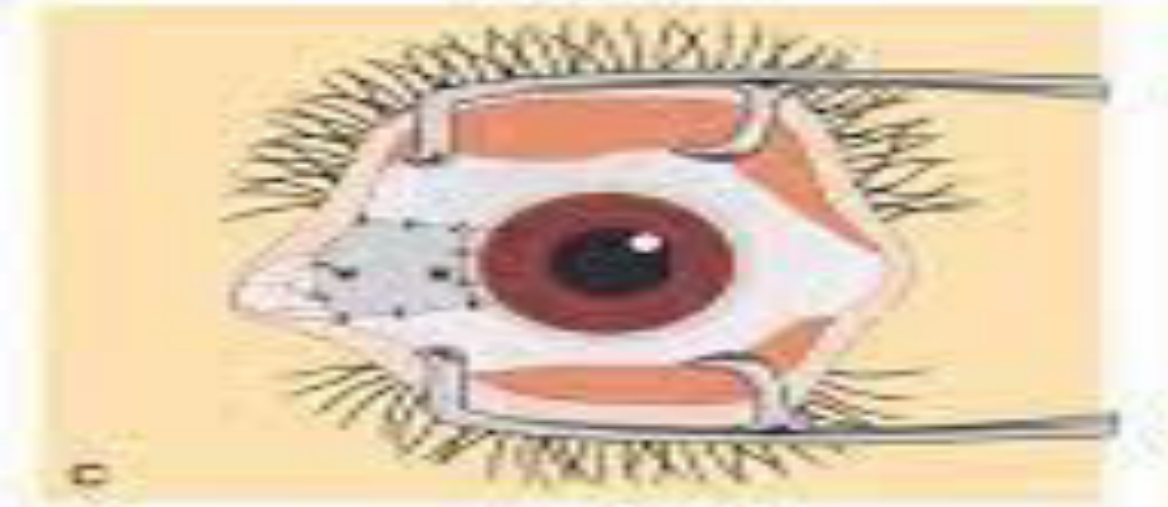
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Pseudo pterygium

- An abnormal fold of conjunctiva attached to cornea at an abnormal location . Other than the nasal area
- Causes
- Corneal injuries & burns
- Peripheral corneal ulcers

Clinical features

- A conjunctival adhesion to the corneal periphery
- In any location/quadrant
- Its neck is free and a probe can be passed behind it
- Can cause diplopia

Pterygium vs pseudopterygium

	Pterygium	*Pseudopterygium*
1. Etiology	Degenerative process	Inflammatory process
2. Age	Usually occurs in elderly persons	Can occur at any age
3. Site	Always situated in the palpebral aperture	Can occur at any site
4. Stages	Either progressive, ssive, regressive or stationary	Always stationary
5. Probe test	Probe cannot be passed underneath	A probe can be passed under the neck

Treatment

- Surgical excision

Episcleritis

- Episcleritis is an inflammatory condition affecting the episcleral tissue between the conjunctiva (the clear mucous membrane lining the inner eyelids and sclera) and the sclera (the white part of the eye) that occurs in the absence of an infection.
- It is a benign self limiting condition

Scenario

- A young pt age 25-30 yrs come to eye opd with redness foreign body sensation. On examination there is redness in the lateral side of the globe . His vision is 6/6 Bes. No pain no discharge. He is also having arthritis.
- What is the most probable cause.?
- A Conjunctivitis
- B Episcleritis
- C Keratitis
- D Uveitis

- Ans B
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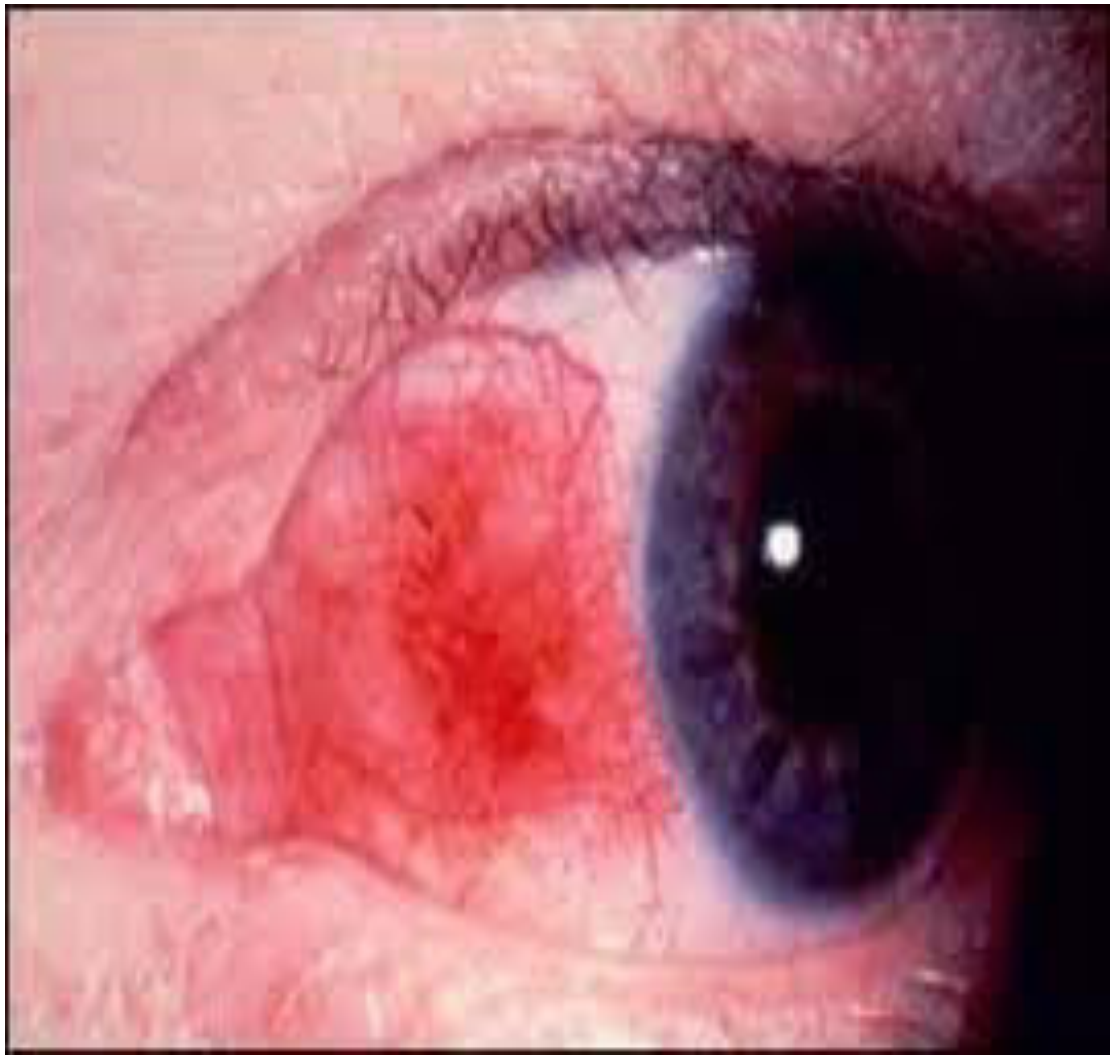
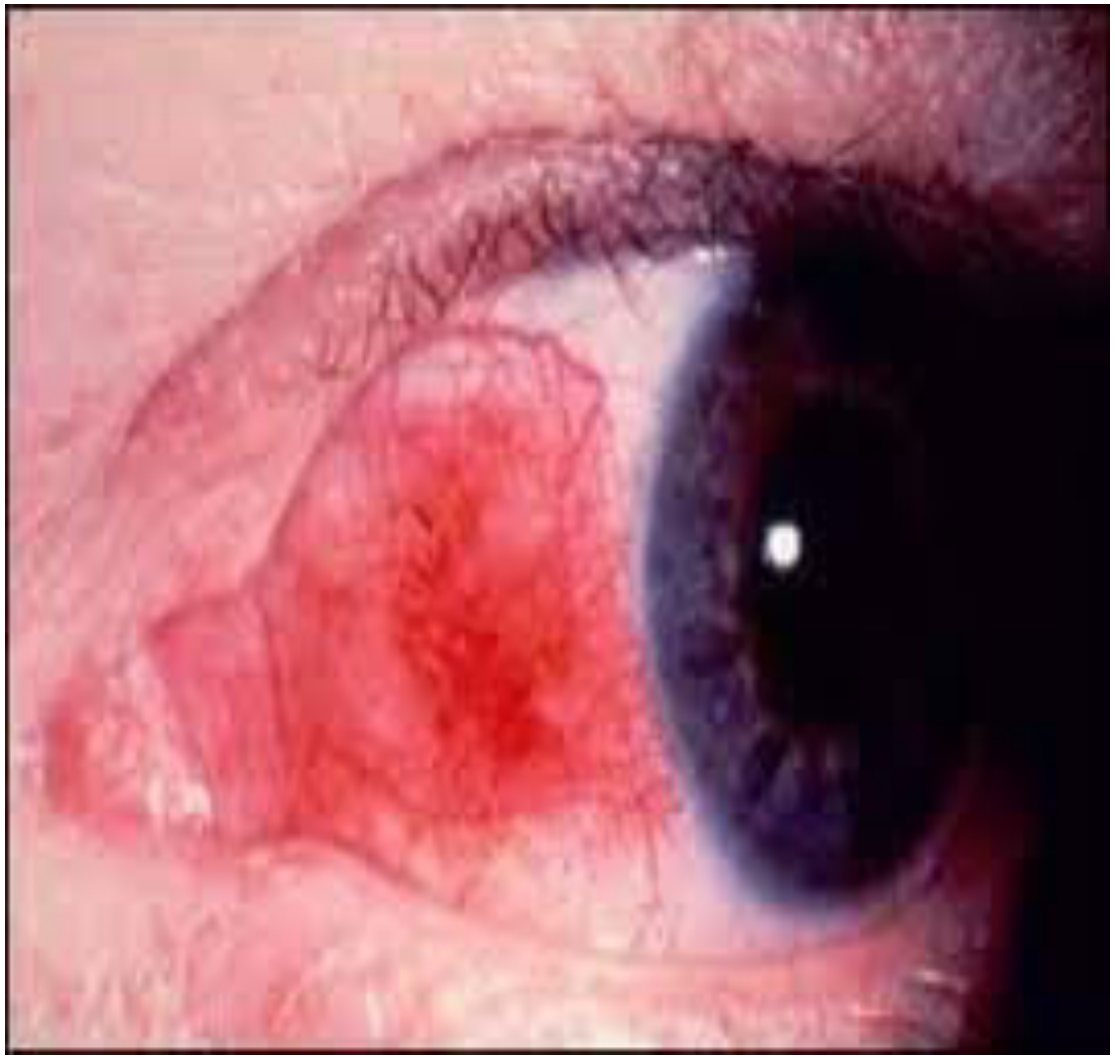
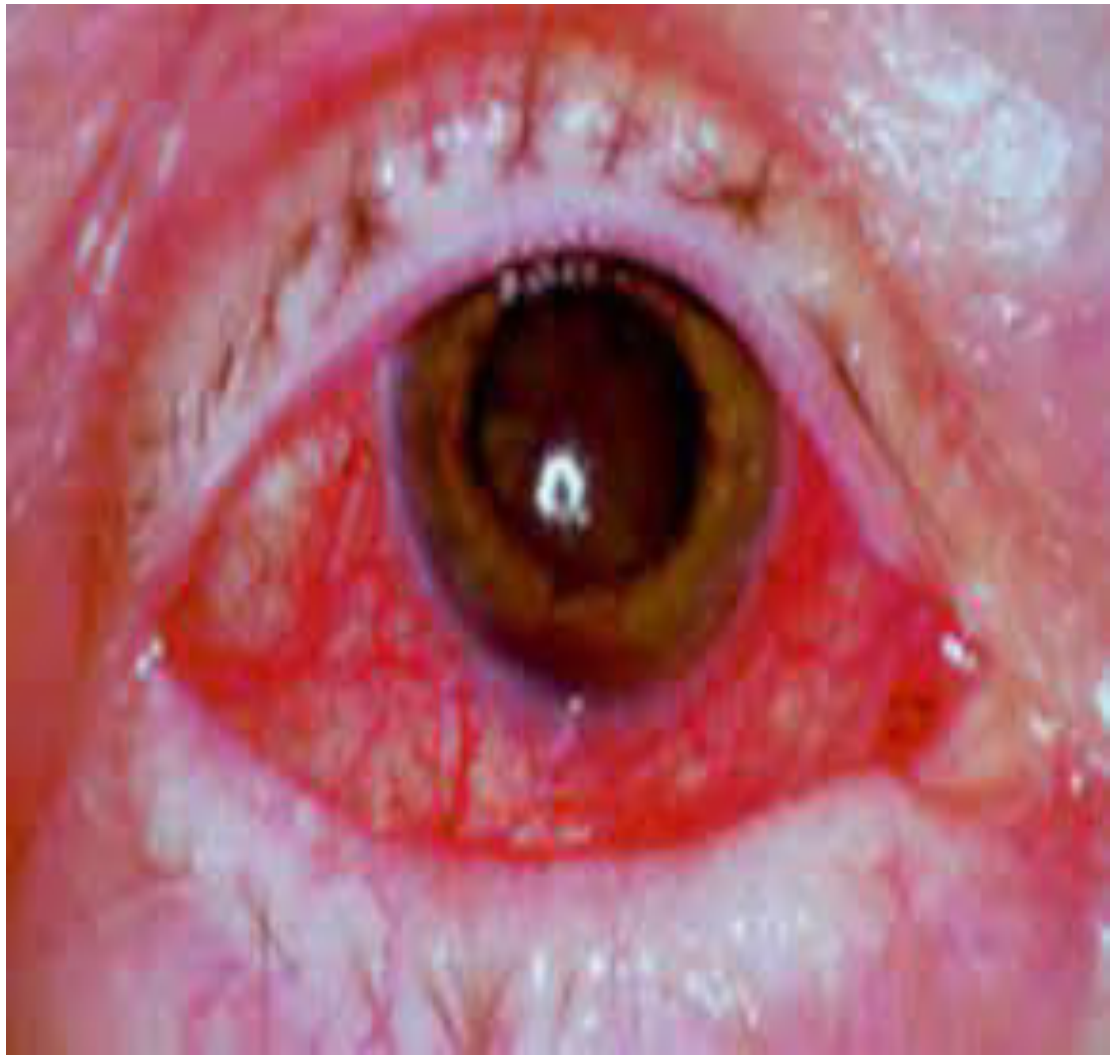






Aetiology

- Idiopathic in many conditions
- May be associated with
- Rheumatoid Arthritis
- Inflammatory bowl disease
- Atopy , Gout . Acne Rosacea
- TB, Syphilis
- May be infective associated with Herpes zoster ,TB ,Syphilis

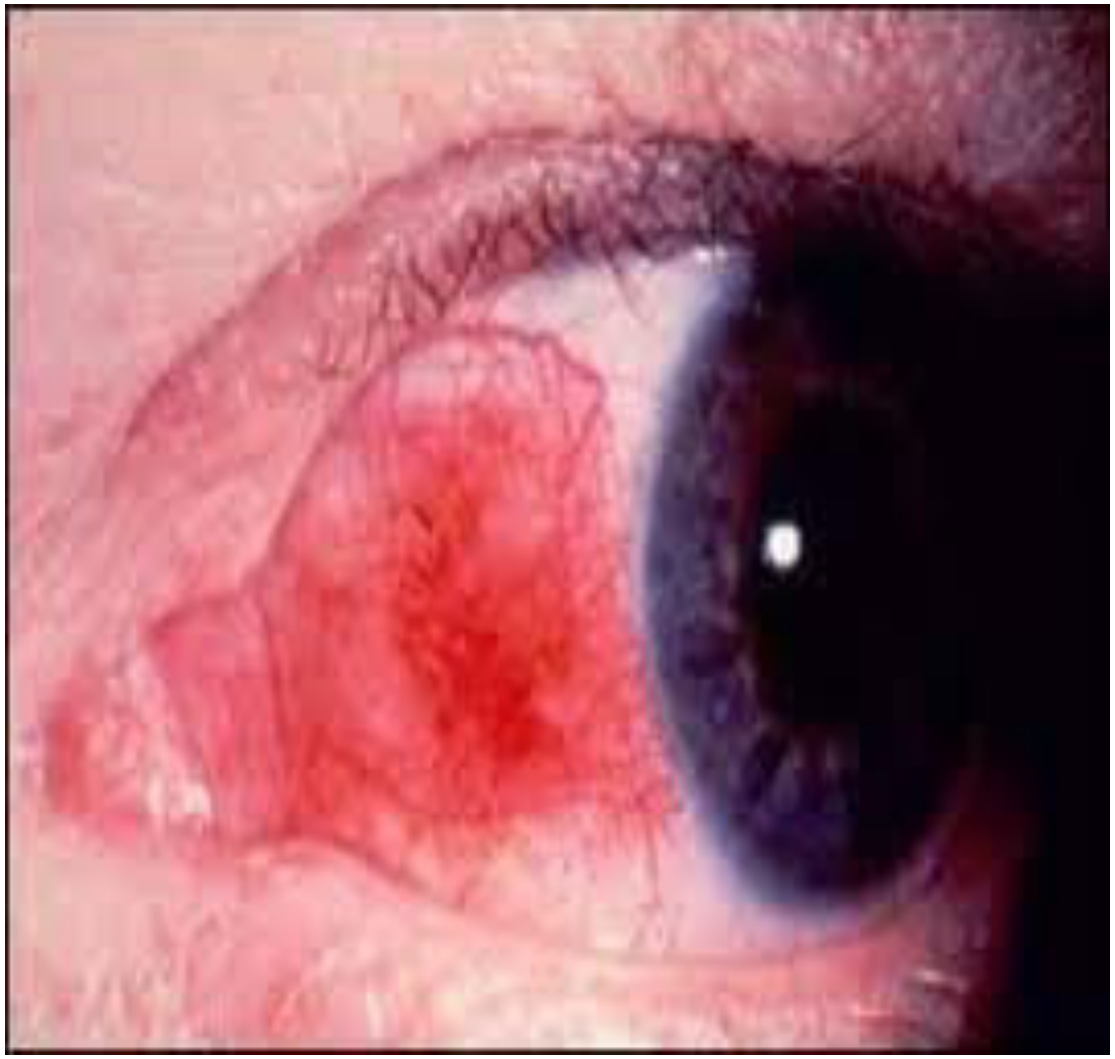
Types

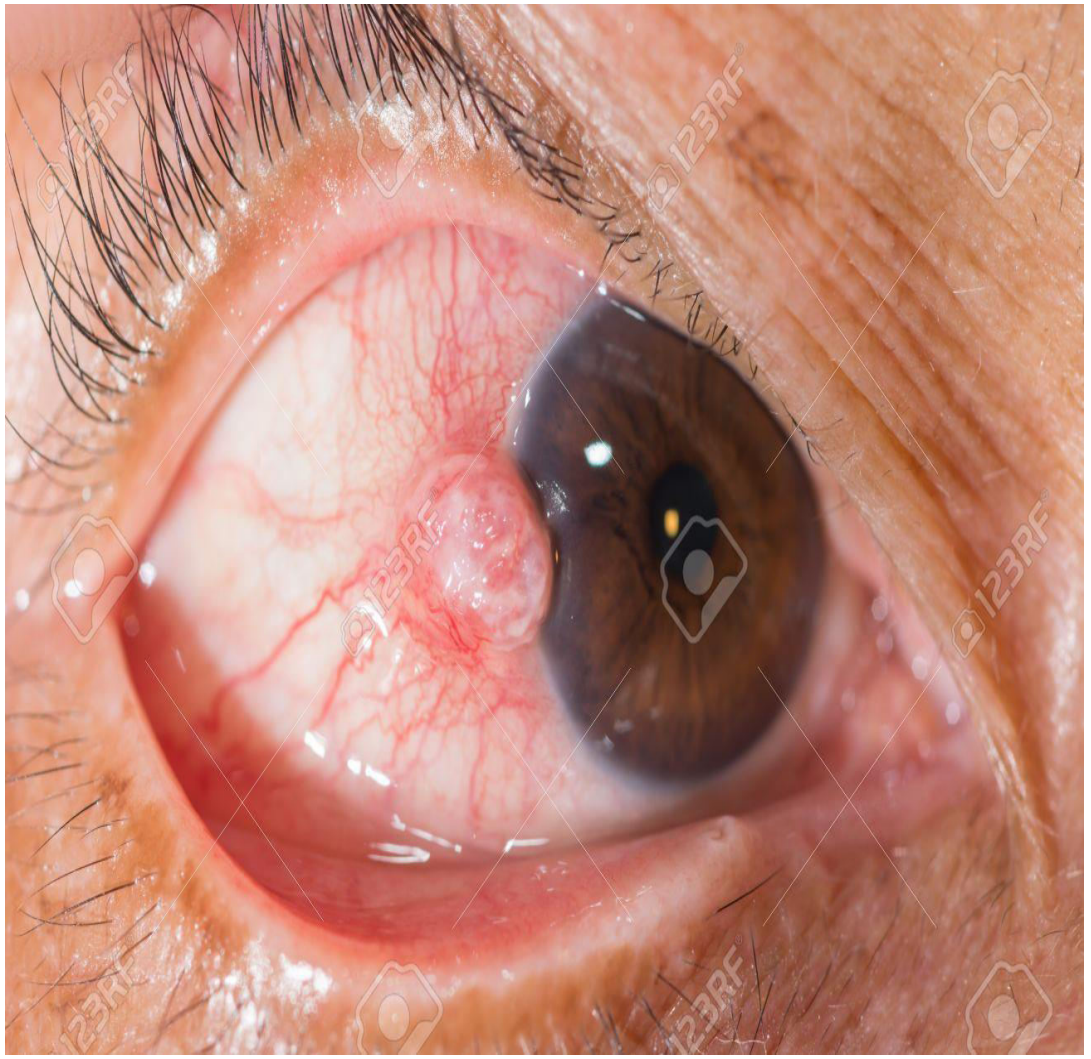
- Simple episcleritis
- Sectorial 70% in which only section is involved
- Diffuse 30% whole episcleral is involved

- Nodular episcleritis is with a localized movable nodule

- Pathology this is a non-granulomatous inflammation with vascular dilatation with perivascular lymphocytes & plasma infiltration

Simple vs Nodular type





Clinical features

Diffuse Scleritis

- Commonest type
- Sectoral /diffuse redness.
- Resolves spontaneously in 1 weeks

Nodular Scleritis

- Localized, raised, congested nodule
- Takes longer time to resolve
- Sclera not swollen
- Sclera appears translucent

Clinical features

- Symptoms
- Usually sudden onset
- Female >male
- 20-35 yrs of age
- Sectorial involvement is common in 70%. Redness usually occur in one sector
- Hotness, pricking sensation, & or discomfort is common

Signs

- Redness varies from mild to severe pink colour
- Sectoral/ diffuse
- Straight inflamed vessels goes posteriorly from the limbus
- The lesion over the deep tissue with application of cotton buds

Diagnosis

- With clinical features
- Topical phenylephrine 2.5% application will blanch the superficial episcleral vessel but not the deep scleral one
- D/D
- Conjunctivitis
- Scleritis

Treatment

- Self limiting; generally within 1-2 weeks
- Topical artificial tears
- Topical vasoconstrictor to reduce the redness
- Topical weak steroid
- Topical NSAID may be required such as diclofenac, naproxen flurbiprofen etc etc

Scleritis

- An inflammatory condition of the sclera
- About 50% are associated with systemic immunological disease
- So systemic problem should be searched out & treated

Aetiology

- Inflammatory with systemic disease such as
- Rheumatoid Arthritis; most common about 40% of cases
- Systemic lupus erythematosus
- Wegners granulomatosis
- Poly arthritis nodosa, Ankylosing spondylitis, Giant cell artritis, inflammatory bowel disease syphilis
- Infective ; such as
- Bacterial TB, syphilis
- Viral such as Herpes zoster

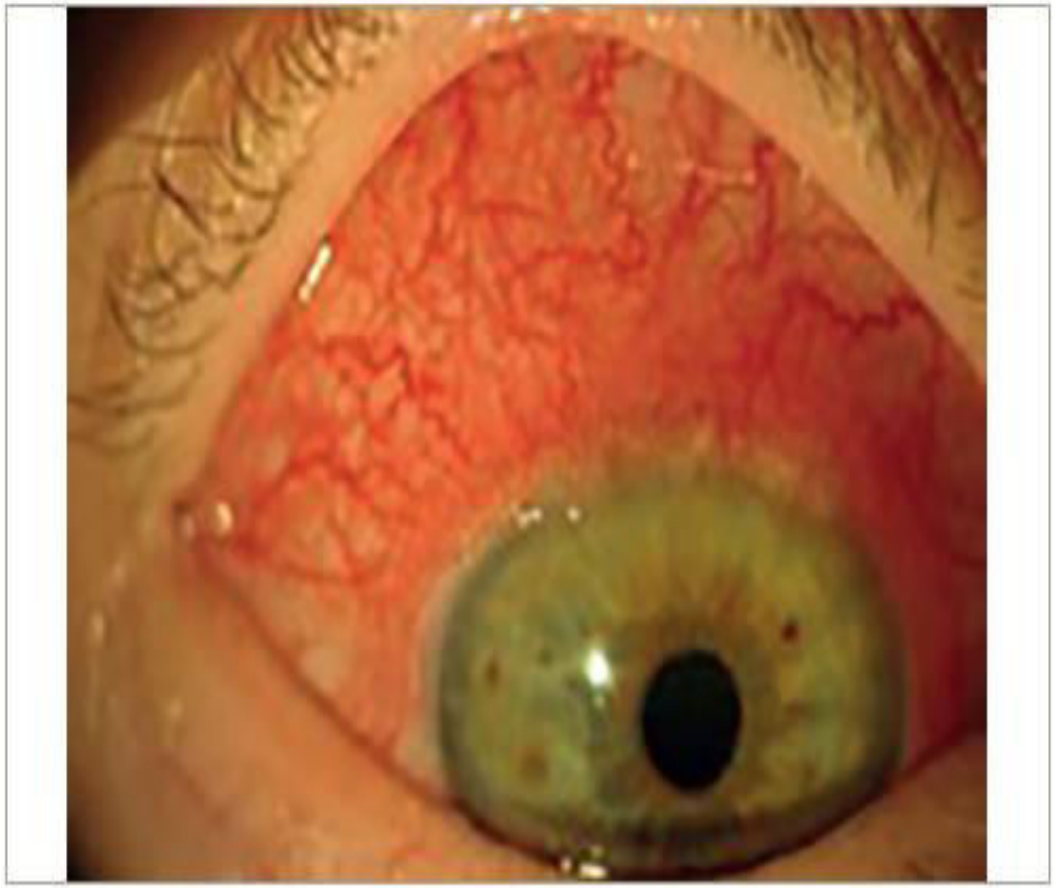
Pathology

- It is an immune mediated vasculitis that destroys the sclera

Classifications

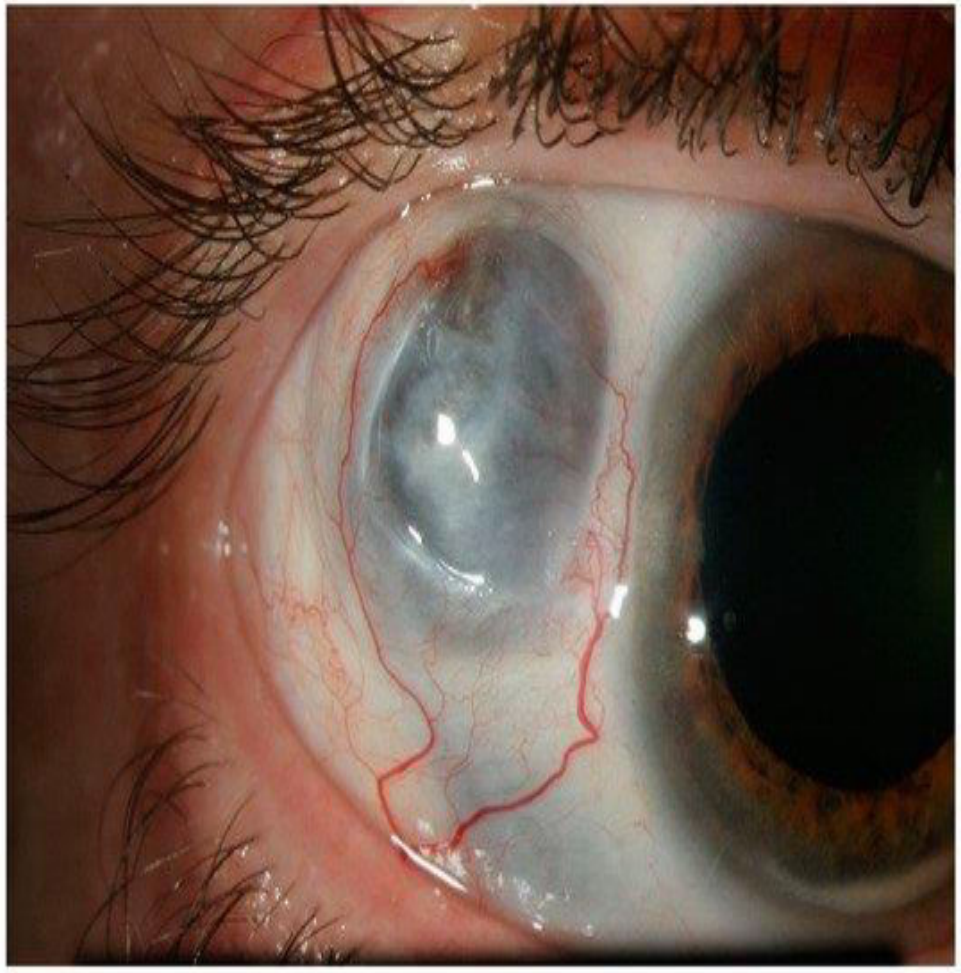
- A Anterior very common . About 98%
- 1 Non narcotizing further
- Diffuse
- Nodular
- 2 Necrotizing further
- With inflammation
- Without inflammation
- B Posterior less common about 2%

Figure 1: Slit-lamp photograph depicting diffuse anterior scleritis



Note the dilated blood vessels and generalized inflammation.

Figure Necrotizing scleritis without inflammation, or scleromalacia perforans



Anterior non-necrotizing

- DIFFUSE
- Relatively benign condition with mild or no visual loss
- Pain is mild
- Rednes is sectoral or diffuse
- Distortion of the normal radial vessel pattern is maintained

- NODULAR
- Pain is moderate
- Red nodule is visible
- Vessel cant be moved over the lesion
- No vascular blanching with 2.5% phenylephrine
- Visual loss in 25% of cases

Anterior Necrotizing type

- WITH INFLAMMATION it painful, initially mild with time becomes severe, cant even sleep
- Onset is gradual
- Bilateral in 60%
- Associated with systemic diseases is common
- Mortality rate is 25% within 5 yrs
- Visual prognosis is poor

- SIGNS on examination the deep vascular complex is congested
- Signs of scleral necrosis with avascular patch due vascular distortion & occlusion
- Conjunctival ulceration over the scleral necrosis
- After resolution thin sclera appears bluish due to underlying uvea

- WITHOUT INFLAMMATION also called as scleromalacia perforin
- Bilateral usually
- Common in women
- No pain is there
- On examination yellowish necrotic patch of sclera in uninflamed area
- Progressive with increasing melting & thinning

Posterior scleritis

- It is the inflammatory condition of sclera posterior to the equator
- Pain & vision loss are common
- Lids may become edematous
- Proptosis
- Ophthalmoplegia
- Anterior segment may be normal
- *Fundus examination may show*
- Swollen disc & retinal detachment

- Choroidal detachment & folds
- Macular edema
- *Diagnosis*
- Detail fundus examination with dilated pupil
- Ultrasonography show T sign due to thickening of the sclera & fluid in the Tenon space
- CT scan shows thick posterior sclera

Investigation

- Complete blood count
- Erythrocyte sedimentation rate ESR
- Circulating immune complex
- Seological test such as
- RA factor (Rheumatoid factor)
- ANA (antinuclear antibodies)
- Ant DNA antibodies (Double stranded DNA antibodies)
- ANCA antineutrophil cytoplasmic antibodies

- Angiotensin converting enzymes(ACE)
- VDRL & FTA- AB
- Uric acid level
- Chest x ray
- Mantoux test

Complications

- Corneal common 37% such as sclerokeratitis, stromal keratitis, marginal corneal melting
- Anterior uveitis
- Glaucoma
- Cataract
- Staphyloma formation

Course

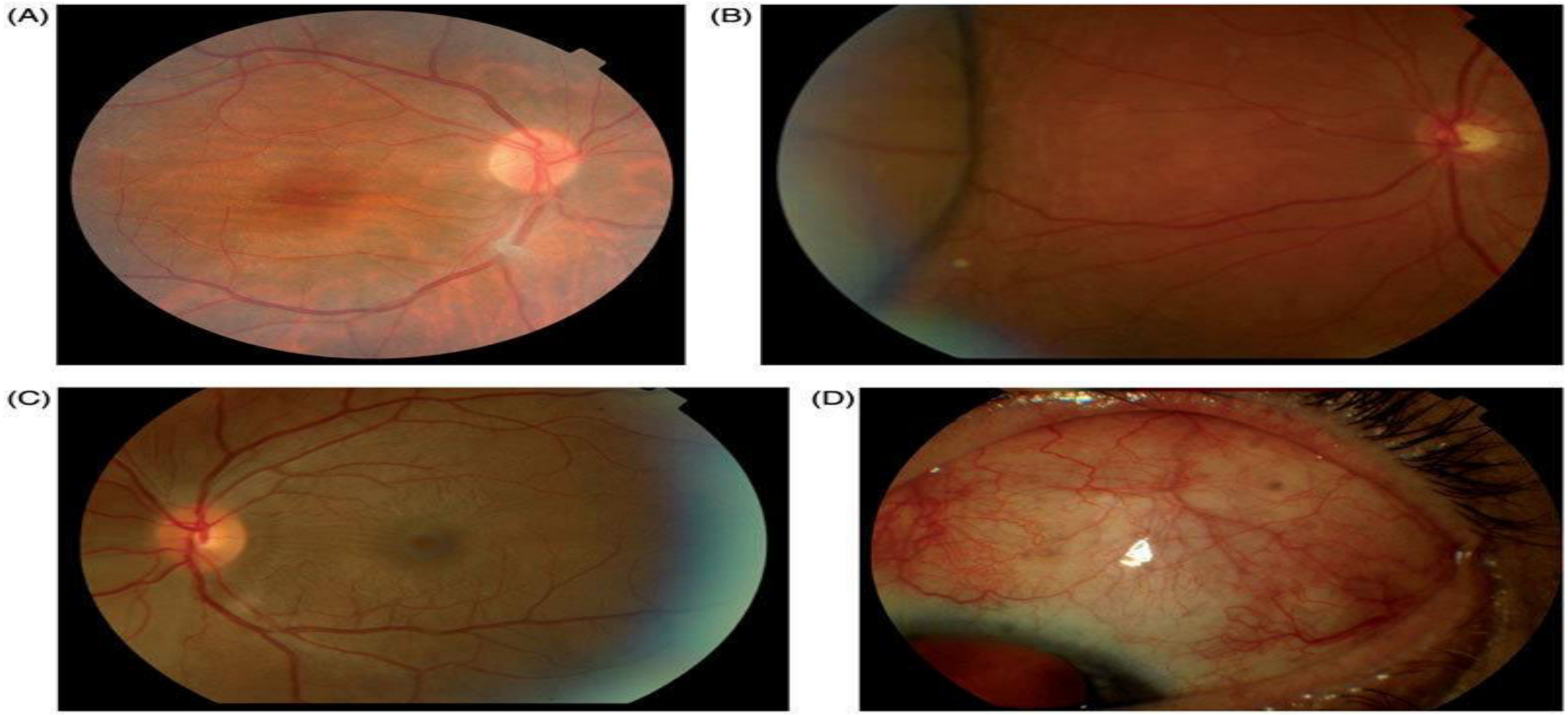
- Complications occur in late stage
- Visual loss in 27-37%
- Uveitis in more than 30%

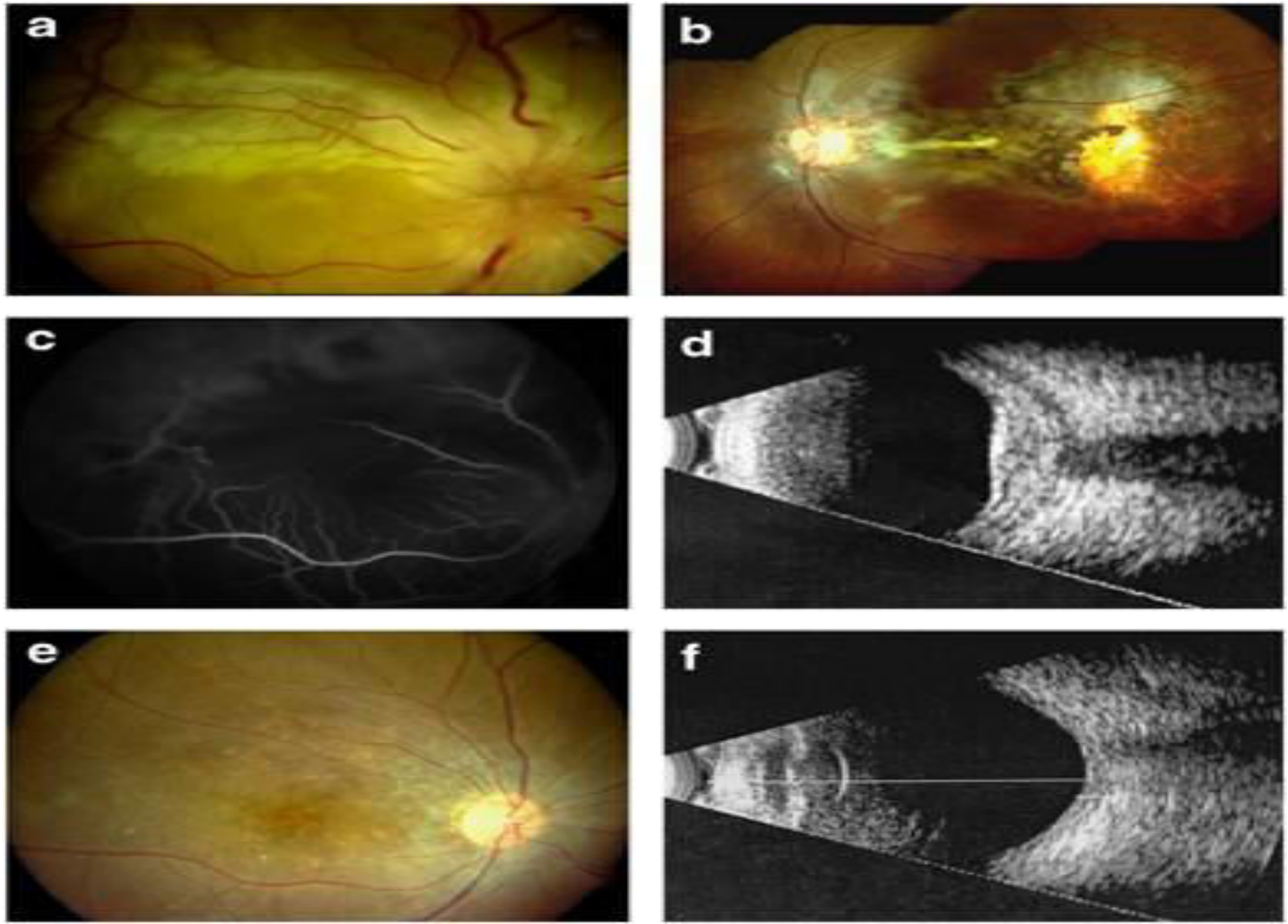
Treatment

- Treat the systemic disease
- Treat the associated ocular problem like cataract glaucoma
- Treatment of scleritis
- Topical steroid
- Systemic NSAID effective also for systemic problem as well as for for ocular

- Systemic steroid for Anterior necrotizing & posterior scleritis
- Systemic immunosuppressive drugs such as cyclosporin, methotrexate cyclophosphamide when steroid are not affective or contra indicated
- Sub-conjunctival steroid injections such as triamcinolone-acetonid for Anterior necrotizing & non-necrotizing scleritis

Photographs of posterior scleritis showing presence of choroidal folds (A), choroidal detachment (B), retinal striae (C), and associated anterior scleritis (D).

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Angiographic, and ultrasonographic presentation, and post-treatment resolution of posterior scleritis with retinal artery occlusion and exudative detachment

- (a) Fundus view of the right eye, showing optic disc oedema, venous dilatation, serous retinal detachment, and segmental pallor along the superotemporal arcade, rendered less prominent by the turbidity of the subretinal fluid.
- (b) Left fundus showed the evidence of resolved inflammation with severe chorioretinal scarring, retinal pigment epithelial atrophy, and pigment migration.
- (c) Mid-phase fluorescein angiogram shows delayed transit of dye from the superotemporal branch retinal artery, with empty corresponding capillaries and vein. The faint choroidal hyperfluorescence is probably indicative of associated inflammatory activity.
- (d) B-scan ultrasound through the right optic nerve shows gross hyper-reflective thickening of the retina-choroid-sclera complex (5.06 mm), fluid in the sub-Tenon's space (T-sign), and squaring of the optic nerve shadow. (e) 4 months later, the fundus shows complete resolution of the inflammatory and vascular sequelae, with residual granular pigmentary stippling of the posterior pole. (f) B-scan confirms the resolution of scleral thickness (1.39 mm) and sub-Tenon's fluid, with normalized optic nerve shadow.
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