

The Red Eye: Benign vs. Serious Conditions

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Disclosures

- Speaker Bureau
 - Sanofi-Pasteur, Merck, Pfizer, Moderna and Seqirus: Vaccines
 - AbbVie and Biohaven: Migraines
 - Idorsia: Insomnia
 - AstraZeneca: Asthma and COPD
 - Exact Sciences: Colorectal Cancer
- Consultant
 - Sanofi-Pasteur, Merck, Pfizer, Moderna, and Seqirus: Vaccines
 - Idorsia: Insomnia
 - Shield Therapeutics: Iron deficiency anemia

All relevant financial disclosures have been mitigated.

Wright, 2024

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Objectives

- Upon completion of this lecture, the participant will be able to:
 1. Identify various causes of a red eye
 2. Differentiate between benign and serious ocular conditions
 3. Discuss treatment options for patients with benign and serious ocular conditions

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History

- Chief complaint

- HPI, including the following associated symptoms:
 - Pain, itching, discharge, tearing, blurring, visual acuity changes, foreign body sensation, photophobia, halo vision

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History (continued)

- Present status of visual function
 - Corrective lens, glasses and use
 - Last eye examination
- Medications
 - Systemic
 - Ocular
- Allergies
- Past history
 - Ocular disease
 - Systemic disease

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History (continued)

- Surgeries (if pertinent)
- Family History
 - Ocular diseases
 - Systemic diseases
- Social history
 - Occupation

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Visual Acuity: Vital Sign of the Eye

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Visual Acuity

- Visual Acuity
 - Test of central vision
 - Controlled by cranial nerve II (Optic)
 - Use a Snellen Chart (wall or hand-held)
 - » Stand 20 feet from wall chart
 - » Place hand held Snellen 13 inches from face

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Ophthalmologic Triad
Red eye, painful eye, and
vision changes

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Red Eye

- Differential falls into the following categories
 - Infections with or without trauma (conjunctivitis)
 - Inflammation with or without trauma (iritis)
 - Vascular (subconjunctival hemorrhage)
 - Systemic diseases
 - Allergies
 - Chemical
 - Acute glaucoma

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Non-vision Threatening Causes of Red Eye

- Subconjunctival hemorrhage
- Hordeolum
- Chalazion
- Blepharitis
- Conjunctivitis
- Dry eyes
- Corneal abrasions

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Hordeolum

- Etiology
 - Obstruction of the glands of Zeiss
 - Staphylococcal aureus is the most common causative organism
- History
 - Swollen, red, painful lesion on the lid margin
 - Itchiness of the eyelid

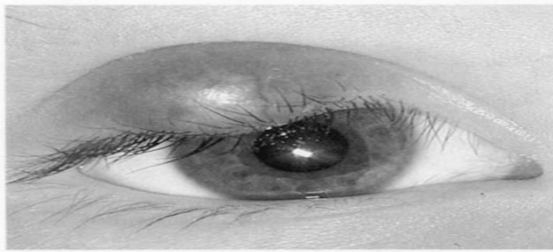
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Hordeolum

- Physical examination
 - Erythematous, tender nodule on the margin of the eyelid
 - Surrounding edema
- Treatment
 - Warm compresses-20 minutes qid
 - Antimicrobial ointment or drops
 - Good eye hygiene and handwashing

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Hordeola



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Hordeola



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Internal Hordeola



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Chalazion

- Etiology
 - Obstructed meibomian glands
 - Chronic inflammatory lesion that grows inward as it enlarges
 - May become infected
- History
 - Lesion on the outside of the eye
 - May become slightly inflamed
 - Usually non-tender

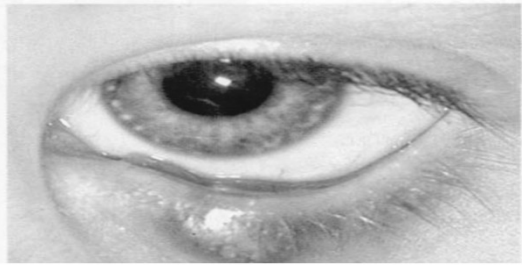
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Chalazion

- Physical examination
 - May or may not visualize a nodule on the outside of the eyelid
 - Visible on the inside of the lid
 - May become erythematous, tender and edematous
- Treatment
 - None
 - Antimicrobial agent if infected
 - Surgical management

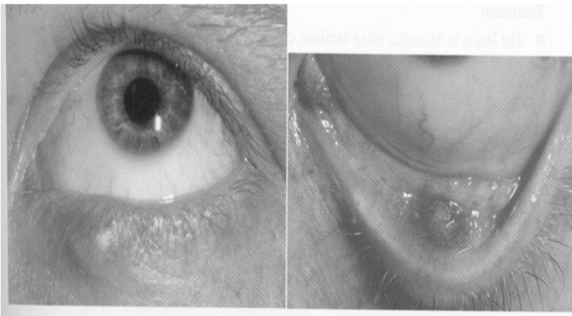
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Chalazion



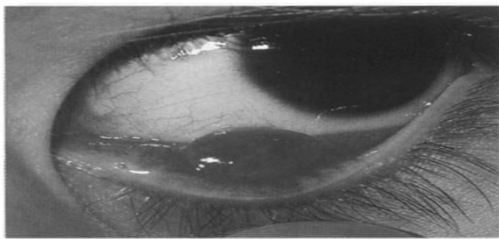
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Chalazion



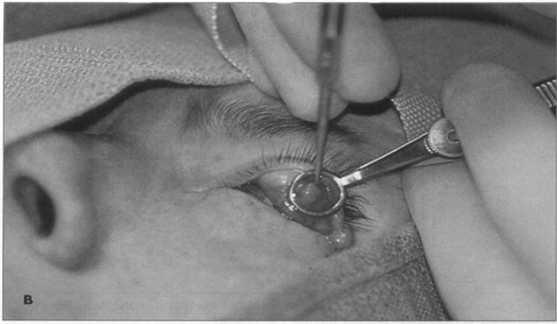
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Chalazion



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Chalazion Removal



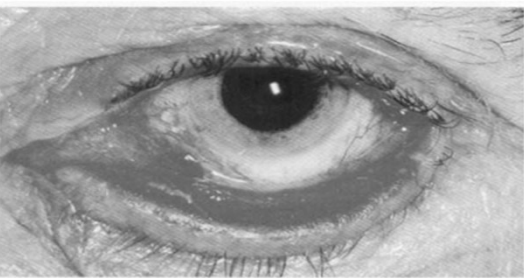
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Entropion



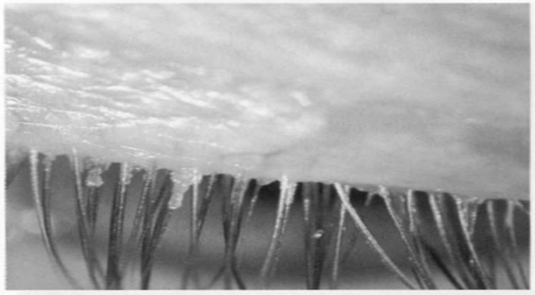
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Ectropion



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Blepharitis



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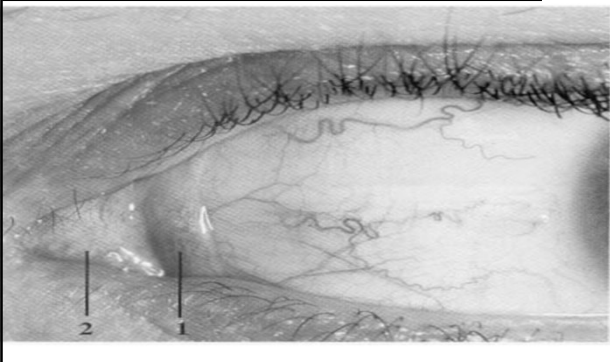
Dacryocystitis



Fig. 12.7. Acute dacryocystitis. The lacrimal sac is swollen.

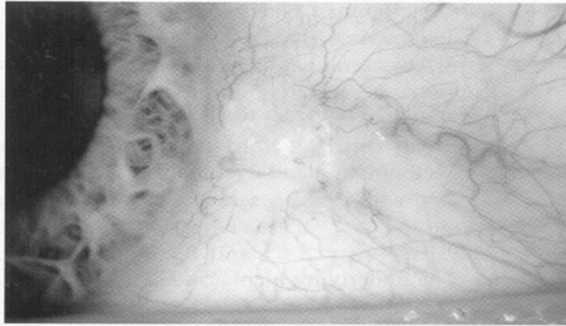
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Normal Conjunctiva



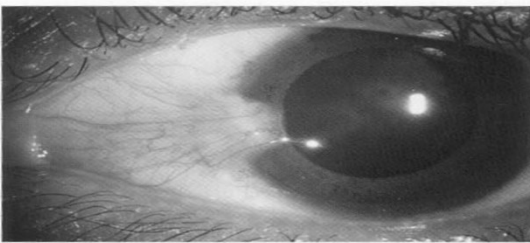
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Pinguecula



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Pterygium



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Viral Conjunctivitis

- Etiology
 - *Adenovirus* is the most common cause
 - » 40 strains identified
 - Recent studies have shown that it can remain viable on plastic and metal surfaces for up to 1 month
- Symptoms
 - Watery discharge, foreign body sensation, redness
 - URI symptoms are common including sore throat and fever
 - Often bilateral

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Viral Conjunctivitis

□ Signs

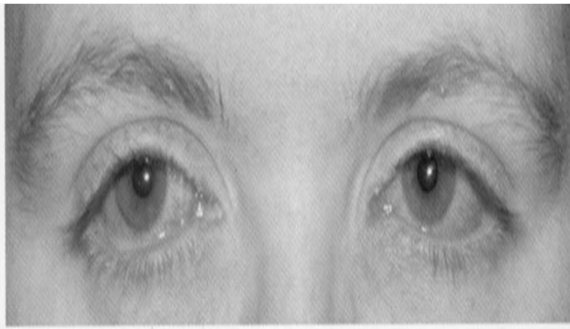
- Normal visual acuity, PERRLA, EOMI, Fund nl
- Mucoid-slightly watery discharge
- Mild, diffuse injection
- Preauricular lymphadenopathy

□ Treatment

- Symptomatic only
- Cool compresses
- Strict eye hygiene

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Viral Conjunctivitis



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Bacterial Conjunctivitis

□ Etiology

- *Staphylococcus aureus*
- *Streptococcus pneumoniae/pyogenes*
- *Haemophilus influenzae*
- *Neisseria gonorrhoea*

□ Symptoms

- Redness, swelling, purulent discharge, itching
- No symptoms until eye complaints began

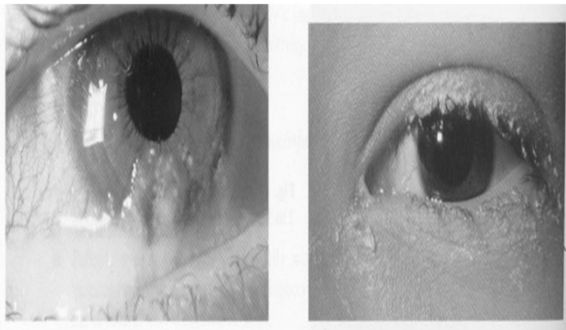
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Bacterial Conjunctivitis

- Signs
 - Normal visual acuity, PERRLA, EOMI, Fund nl
 - Diffuse injection
 - No ciliary injection
 - Unilateral at onset
- Treatment
 - Topical antimicrobials x 5-7 days
 - Warm compresses qid x 10-20 minutes
 - Strict eye hygiene given contagion

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Bacterial Conjunctivitis



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Conjunctivitis

- | | |
|--|---|
| <ul style="list-style-type: none">□ Viral<ul style="list-style-type: none">- Palpable preauricular node- Watery discharge- Mild-moderate conjunctival injection- URI symptoms- Bilateral | <ul style="list-style-type: none">□ Bacterial<ul style="list-style-type: none">- Non-palpable nodes<ul style="list-style-type: none">» GC and Chlamydia +- Purulent discharge<ul style="list-style-type: none">» GC-Mucopurulent- Moderate conjunctival injection- Unilateral at onset |
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Allergic Conjunctivitis

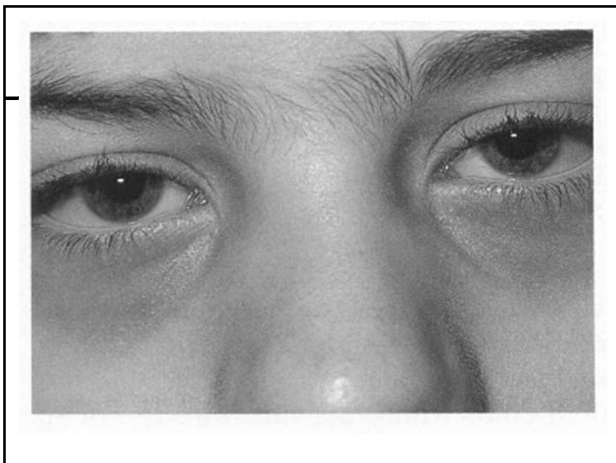
- Two types of allergic conjunctivitis
 - Seasonal and perennial
- Seasonal is most common and caused by the following triggers
 - Pollens
 - Grass
 - Ragweed
- Perennial persists all year and is caused by indoor allergens, such as dust mites

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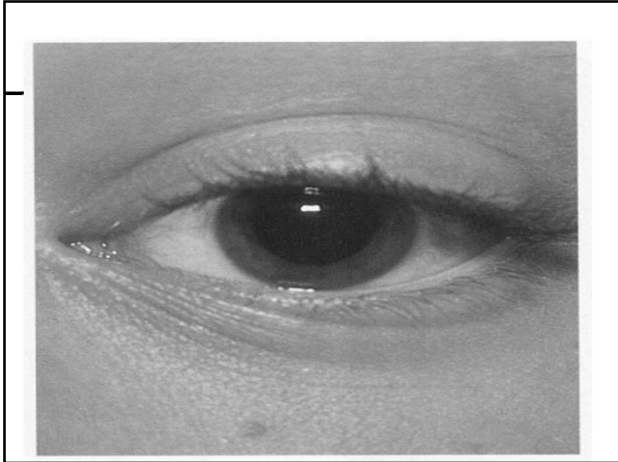
Signs and Symptoms

- Symptoms
 - Itching
 - Watery– stringy-like clear discharge
- Signs
 - Injected conjunctiva
 - Other physical examination findings such as:
 - » Dennie’s lines
 - » Allergic shiners
 - » Allergic facies
 - » Allergic crease

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Treatment

- Systemic and/or topical antihistamines relieve acute symptoms due to interaction of histamine at ocular H1 and H2 receptors
- Examples of topical antihistamines include: epinastine (Elestat) and azelastine (Optivar)
- Vasoconstrictors are available either alone or in conjunction with antihistamines to provide short-term relief of vascular injection and redness
 - » Common vasoconstrictors include naphazoline, phenylephrine, oxymetazoline, and tetrahydrozoline

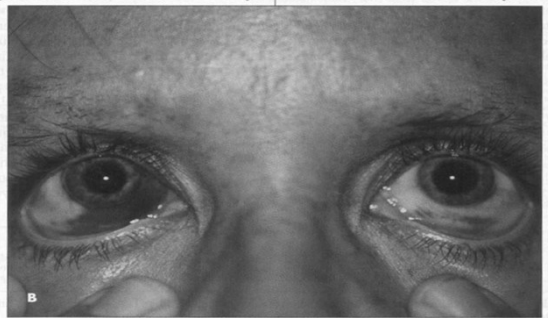
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Treatment

- Mast cell stabilizers include cromolyn sodium and lodoxamide (Alomide), Olopatadine (Patanol), nedocromil (Alocril)
- Nonsteroidal anti-inflammatory drugs (NSAIDs) act on the cyclooxygenase metabolic pathway and inhibit production of prostaglandins. One example is: ketorolac tromethamine (Acular)

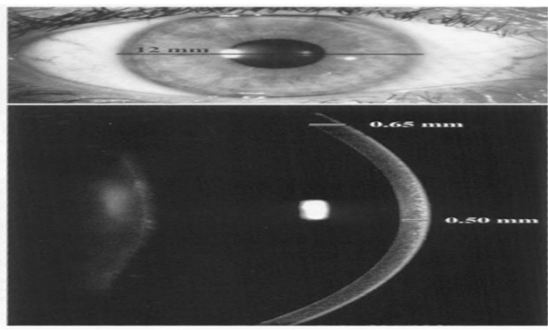
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Excessive Vomiting Causing
Subconjunctival Hemorrhages



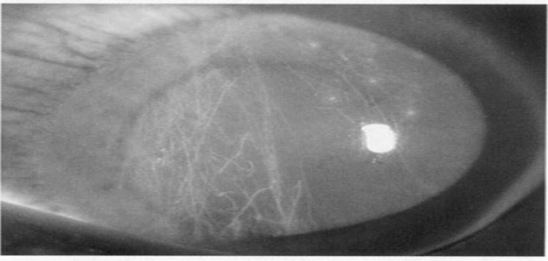
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Cornea



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Corneal Abrasion



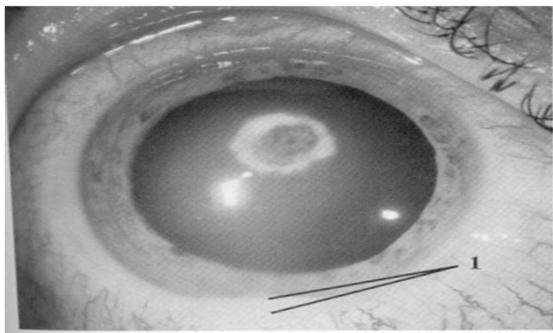
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Vision Threatening Red Eye Disorders

- Corneal Infections or Ulcerations
- Hyphema
- Hypopyon
- Iritis/Uveitis
- Acute Angle Closure Glaucoma
- Orbital Cellulitis
- Chemical injury (particularly-alkali)

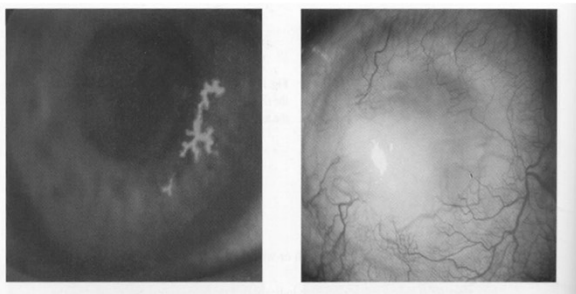
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Corneal Ulcer



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Herpes Simplex



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Case Study 2: M.R.

- 62 y.o.w.m presents with a 3 hour history of a headache, located behind his right eye
 - Never had anything like this before
 - 9 on a 1-10 scale (10 severe pain)
 - Associated with blurred vision and watering in right eye
 - Denies trauma, history of systemic or ocular diseases
 - Meds: none Allergies: NKDA

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Case Study 2: M.R.

- PE: Slightly dilated pupil (OD), Nonreactive and mild injection. Firm globe. IOP: 80. Remainder of physical examination-normal.

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Acute Angle Closure Glaucoma

- Definition
 - Sudden blockage of the aqueous outflow tract of the eye
 - Causes: Idiopathic, emotional or physical stress, rarely-instillation of dilating drops
 - Genetic predisposition (1st degree relatives: 2-5% risk)
- Symptoms
 - Severe ocular pain
 - Frontal headache
 - Blurred vision with halos around lights
 - Nausea and vomiting

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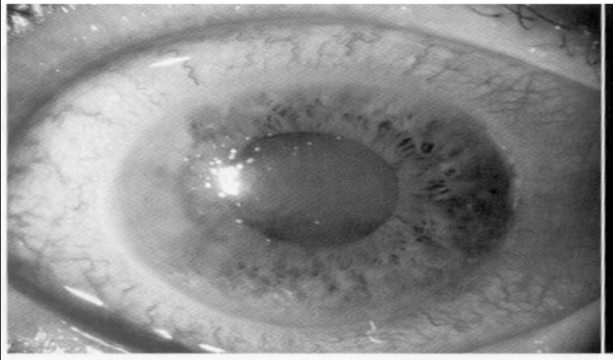
Acute Angle Closure Glaucoma

□ Signs

- Injected eye
- Mid-dilated nonreactive pupil
- Steamy, cloudy cornea
- Firm globe
- Increased intraocular pressure (40-80)
- Narrow angle
- Shallow anterior chamber in other eye
- May simulate a cerebral bleed

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Acute Angle Closure Glaucoma



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Narrow Angles

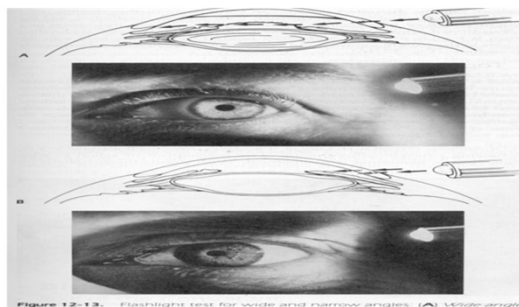
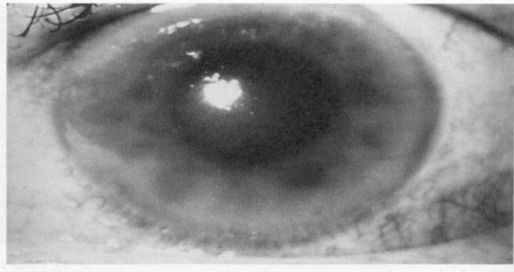


Figure 12-13. Flashlight test for wide and narrow angles. (A) Middle angle

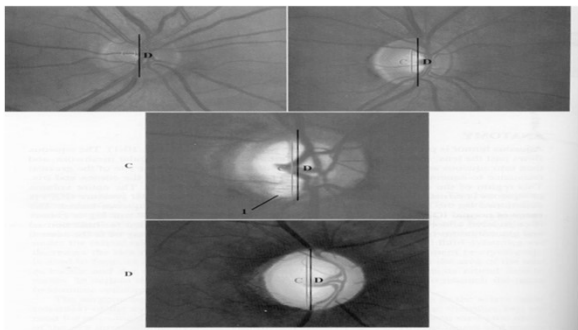
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Acute Angle-Closure Glaucoma



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Optic Disc/Nerve Cupping



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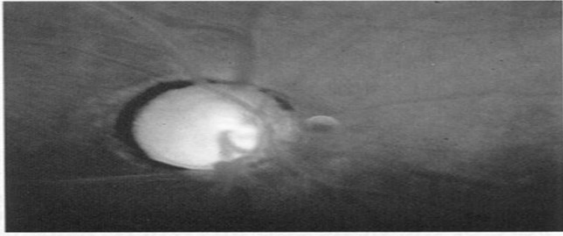
Acute Angle Closure Glaucoma

□ Treatment

- Ocular emergency
- Immediate referral for treatment
- Medical Management
 - » Hyperosmotic agents
 - » Diamox and eye drops
- Surgical Treatment

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Glaucomatous Optic Atrophy



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Case Study 3: TY

TY is a 5 yowm who presents with his mom for an evaluation of (R) pink eye. Began this am. Denies discharge, itching, recent URI. Mom denies trauma but does report strange occurrence yesterday. He failed to respond to her calling. When he finally came, he reported being asleep outside.

PE: Absent red reflex-OD; Visual acuity 20/100 (OD); 20/30 (OS); Pupil-slightly constricted (OD). Unable to view the fundus (OD)

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Hyphema

□ Definition

- Bleeding into the anterior chamber of the iris
- Causes include trauma or surgery

□ Symptoms

- Pain, red eye, blood in anterior chamber
- Blurred or Absent vision

□ Signs

- Absence of the red reflex
- Blood in the anterior chamber
- Increased IOP

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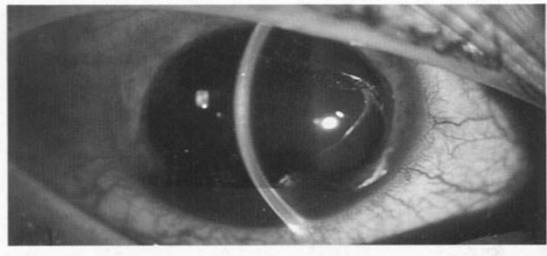
Hyphema

□ Signs

- Decreased visual acuity
- Injected conjunctiva (mild-severe)

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Hyphema



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Complication of Hyphema



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Hyphema

□ Treatment

- Always assume that the globe is ruptured as 25% have other serious ocular injuries
- Shield the eye and refer immediately
- Can lead to devastating visual complications including blood staining of the cornea, glaucoma, atrophy of the optic nerve

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Case Study 4: HH

- 60 year old man with ankylosing spondylitis presents with a one day history of worsening pain in the right eye. Progressive worsening of vision in right eye.
 - Meds: Tylenol 2 po q4h, diltiazem 240mg qd, gemfibrozil 600mg bid
 - PMH: Ankylosing spondylitis, Hypertension, Hyperlipidemia

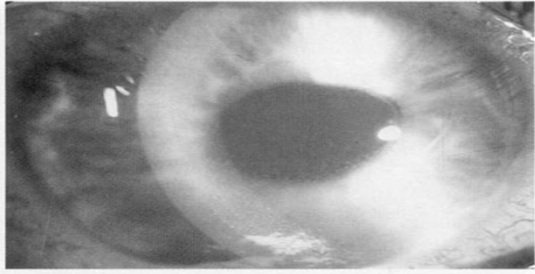
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Case Study 4: HH

- Physical Examination
 - Visual acuity (OD) 20/200; OS-20/25, uncorrected. Constricted pupil OD (2mm) and 4mm OS. Moderate ciliary injection. Difficulty visualizing the fundus OD.

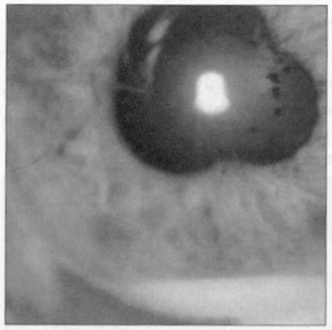
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Anterior Uveitis



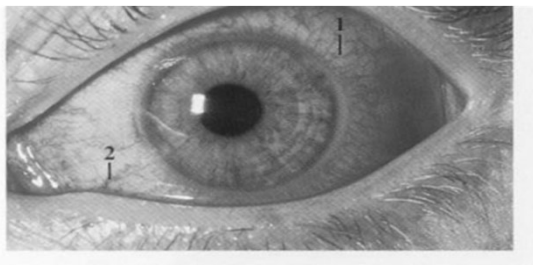
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Uveitis



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Uveitis



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Anterior Uveitis

- Etiology
 - Inflammation of the iris
 - 50-70% of patient's with iritis are HLA-B27 positive and >50% have a systemic disease
 - Male > Female
- Symptoms
 - Decreased visual acuity
 - Acute onset
 - Deep eye pain
 - Photophobia
 - Red eye

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Anterior Uveitis

- Signs
 - Ciliary injection
 - Small pupillary size on affected side
 - Usually unilateral
 - Other systemic diseases
- Treatment
 - Ocular emergency; immediate referral
 - Prednisolone acetate 1% suspension q1 hour to affected eye
 - Can result in vision loss

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Case Study 8: PP

- PP is a 39 yowf who presents approximately 24 hours after feeling as if something flew into her left eye. Was at a soccer game and wonders if it was sand. Tried irrigating without improvement. + Foreign body sensation and slight ache in L eye. Denies photophobia, visual changes, discharge, pain, contact use. Last eye exam < 1 year ago. PMH: Noncontributory.
- PE: Visual acuity: 20/25 OS, 20/20 OD, 20/20 OU uncorrected. PERRLA. EOMI. Fund-nl

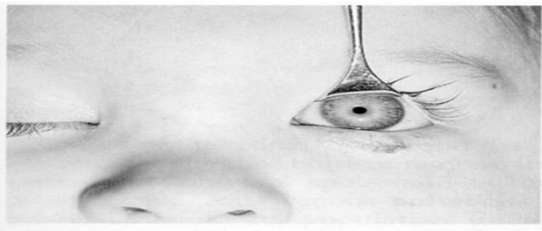
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Foreign Body

- Definition
 - Non-infected, small, recent corneal or conjunctival foreign body
- Common Locations For Foreign Bodies
 - Eyelids
 - Conjunctiva
 - Cornea
- Symptoms
 - Pain, photophobia, blurred vision, foreign body sensation, tearing, redness, and lid edema

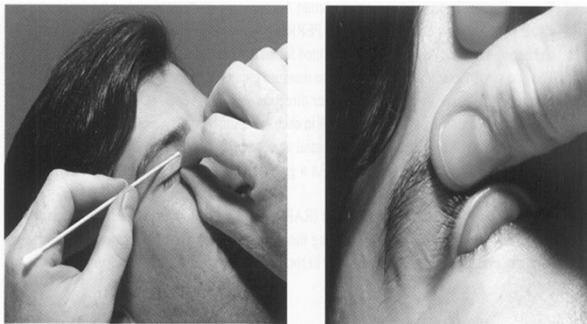
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Desmarre Lid Retractor



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Eye Eversion



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Foreign Body



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Foreign Body

- Follow-up Care
 - Tetanus immunization
 - Instruct patient not to rub eye
 - Topical antimicrobial
 - Patch or not?
 - Follow up evaluation in office in 24 hours
 - Follow up with ophthalmologist in 1 to 2 days as needed
 - Safety goggles

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Red Flags

- Red Flags
 - Infection
 - Ulceration
 - Large metal objects or those embedded longer than 24 hours
 - Deep or centrally located foreign bodies
 - Suspected high-velocity injury
 - Exposure to caustic or acidic media
 - Ruptured globe
 - Blood in anterior chamber
 - Painless loss of vision
 - Unable to fully cooperate

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Reasons to Refer Immediately

- Sudden unilateral loss of vision
- Lacerations that involve the lid margin or tear duct apparatus
- Ocular pain, photophobia, ciliary injection
- Corneal ulceration
- Hyphema or Hypopyon
- Pupillary distortion
- Central or deep foreign body
- Iritis or scleritis

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Blowout Fracture



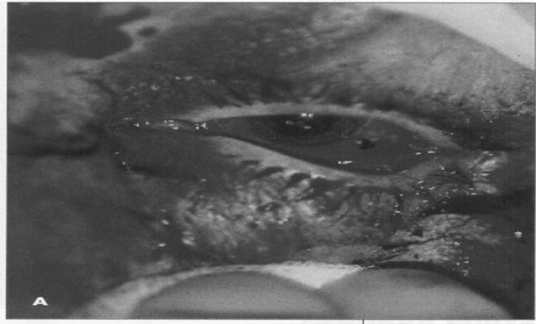
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Blowout-Fracture



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Aerosol Can Explosion



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Pitfalls to avoid...

- Do not diagnose over the phone
- Do not patch an eye with a contact lens corneal abrasion
- Do not patch a diabetic with a corneal abrasion
- Always provide follow-up with a corneal abrasion
- Never dispense topical anesthetics
- Do not dispense topical steroids

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Thank You!

**I Will Be Happy To
Entertain Any Questions**

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