Ashford and St. Peter's Hospitals NHS
NHS Trust

Common Eye Emergencies

Namir Kafil-Hussain
Consultant Ophthalmic Surgeon

First Stop in The Journey of Ophthalmic patients - A GP Survey; 150 practices Shieffield area 2008

Task	Yes response %
Visual acuity testing	85
Use of pinhole	10
Confident with your findings	61
Able to tell if disc is normal or not by ophthamoscopy	76
Able to tell if macula is normal or not by ophthamoscopy	30
Do you dilate the pupils?	13

First Stop in The Journey of Ophthalmic patients - A GP Survey; 150 practices Shieffield area 2008

• Eye condition treated	• Yes response %
• Acute red eye with discharge	• 98
• Blepharitis	• 95
• Dry eye	• 94
• Itchy eye	• 97
• Recurrent iritis	• 43
• Painful red eye	• 40
• Minor surgical procedures	• 56

The Red Eye

- About 80 % of the patients referred to our casualty present with a red eye. A careful clinical assessment usually produced a correct diagnosis.
- History
  - Use of contact lens *(consider corneal ulcer in contact lens users with painful eye)*
  - Sticky discharge *(suggest infective conjunctivitis)*
  - Past history of iritis *(consider recurrence)*
  - Presence of itching *(allergic conjunctivitis)*
- Examination
  - Assessment of both eyes with Snellen chart *(reduced vision needs urgent referrals)*
  - Examine the anterior segment with a bright torch and note:
  - injection of the conjunctiva *(conjunctivitis)*
  - cornea for opacity *(ulcer or acute glaucoma)*
  - pupil reaction to light *(fixed pupil is seen in acute glaucoma and iritis)*

The Red Eye

- **Patients with pain +/- blurring of vision is likely to have a sight-threatening conditions. The most important differential diagnosis are:**
- **Acute glaucoma**
- **Corneal infection**
- **Iritis**
- **Patient without pain are likely to have a self-limiting conditions, the most common are:**
- **Conjunctivitis**
- **Episcleritis**
- **Subconjunctival haemorrhage**

Conjunctivitis

© 2005 Elsevier Ltd. Pediatric Ophthalmology and Strabismus 3e.

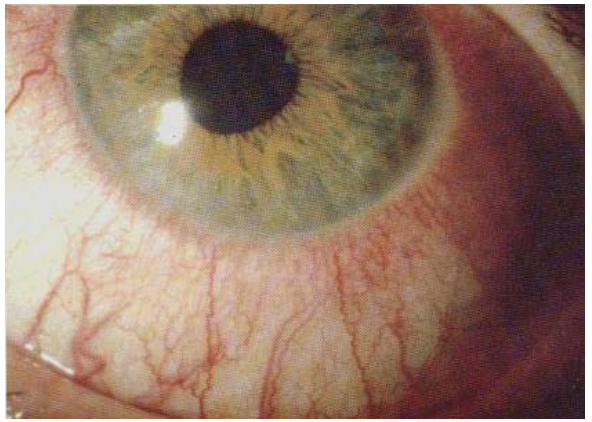
© 2005 Elsevier Ltd. Pediatric Ophthalmology and Strabismus 3e.

Conjunctivitis

- **Inflammation of the conjunctiva is usually caused by either infection or allergy. The eye is red and uncomfortable but pain is not common.**
- **Presentation:**
  - **Infective conjunctivitis usually present with discharging or sticky eyes.**
  - **There may be a history of contact with people with red eyes.**
  - **Allergic conjunctivitis is commonly seen in patients with atopy or hay fever. Itchy red eye is a prominent feature**
- **Examination:**
  - **The visual acuity is usually normal**
  - **One or both eyes may be affected and the eyelids may be swollen**
  - **The conjunctiva is oedematous and there are visible changes on the tarsal conjunctiva**
- **Treatment:**
  - **In the general practice, it is difficult to differentiate between bacterial from viral conjunctivitis. However, it is acceptable to treat all infective conjunctivitis with topical antibiotics such as chloramphenicol as it can prevent secondary infection in viral conjunctivitis. The conjunctivitis usually takes about one or two weeks to settle.**
  - **Patient with allergic conjunctivitis will benefit from topical sodium cromoglycate such as opticrom. It is important to determine the cause as the allergen (for example eye drops or cosmetic) may be eliminated.**
- **Refer the patient to the casualty only if the conjunctivitis fails to respond to treatment**

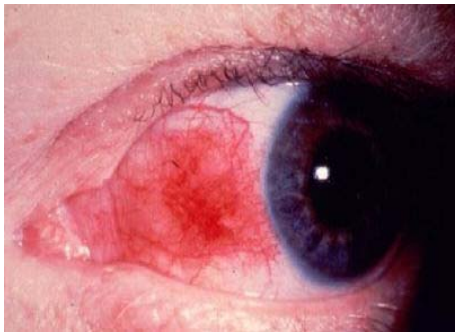
Iritis

- Seen mainly in young people. Occasionally associated with systemic conditions such as ankylosing spondylitis and sarcoidosis.
- Presentation:
  - Painful red eye
  - Photophobia with reduced vision
  - May have been treated for resistant conjunctivitis
- Examination:
  - Visual acuity is reduced to varying degree
  - Redness mainly around the cornea (ciliary injection)
  - Pupil is usually constricted or irregular reacting poorly to light.
  - In severe cases, clumps of white cells (keratitic precipitates may be seen behind the cornea)
- Management: Refer the patient within 24 hours.
  - Slit-lamp examination by ophthalmologists to confirm the diagnosis.
  - Treatment is with intensive topical steroid to reduce inflammation and mydriatic to dilate the pupil so that the iris does not stick to the cornea causing problem with glaucoma.



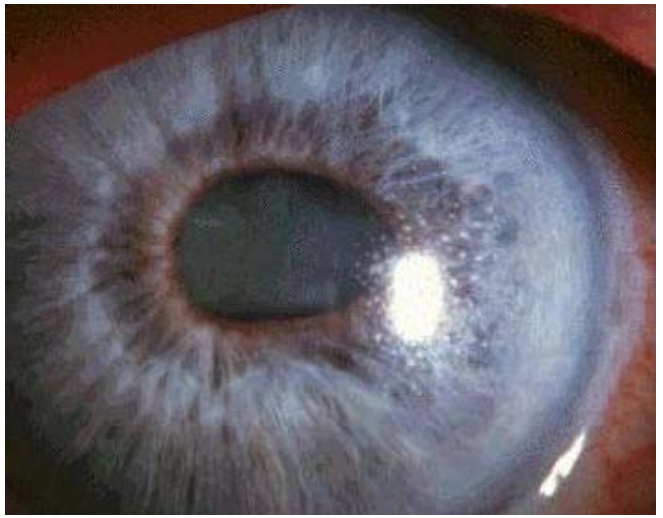
Episcleritis

- This is an autoimmune disorder of unknown cause although some patients have a history of autoimmune disorders such as rheumatoid arthritis. Scleritis is rare ; 0.1% of the presentations in emergency eye clinic.
- Presentation:
  - Localised patch of redness on the eye white with little discomfort
- Examination:
  - The visual acuity is normal
  - Localised area of conjunctival injection and the underlying episclera
  - No discharge
- Management: This condition is self-limiting
  - If there is no discomfort, no treatment is needed. The condition resolves within two weeks and recurrence is common.
  - If the patient complains of discomfort or if the problem fails to resolve spontaneously, refer the patient in the same week. Topical mild steroid may be needed.
  - Episcleral vessels can be moved with a cotton bud. If you apply phenylephrine 2.5%, they blanch (remember that this will also dilate the pupil). Scleral vessels appear darker, follow a radial pattern, are immobile and do not blanch.



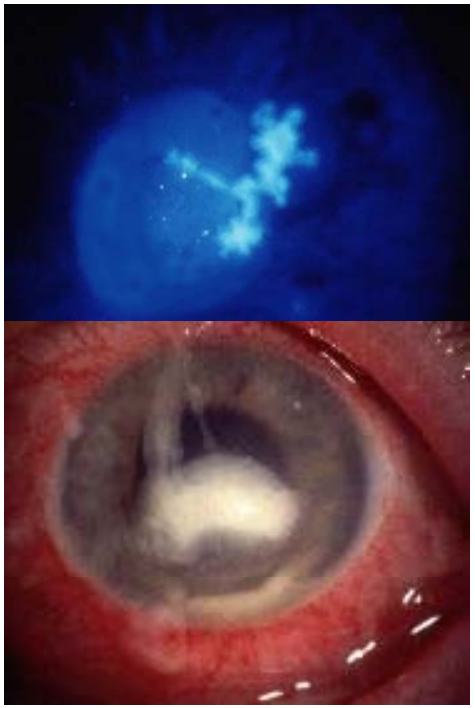
Acute glaucoma

- Rare cause of painful red eye but early diagnosis important to prevent severe visual loss. About 1 in 1,000 people get AACG. It is more likely in people over the age of 40 years, and most often happens at around age 60 to 70 years.
- Presentation:
  - Severely painful red eye.
  - Haloes around light common.
  - Patients usually over 50 years old.
  - Nausea and vomiting common
- Examination:
  - Reduced visual acuity.
  - Hazy cornea and the iris is not clearly visible.
  - Pupil is fixed or semi-dilated, unreactive to light
- Management:
  - Urgent referrals i.e. as soon as possible and not the next day.
  - Patient is usually admitted and given acetazolamide IV to lower pressure. Topical pilocarpine and steroid (to reduce inflammation) are also given.



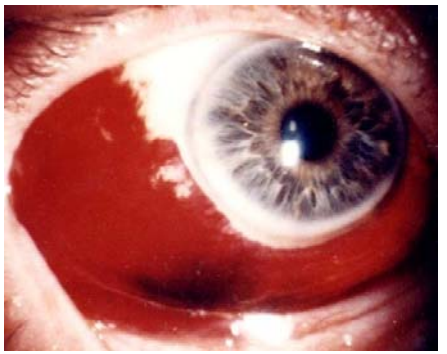
Corneal infections

- **This is a potentially sight threatening condition. Avoid using steroid if corneal infection can not be excluded as steroid can worsen the infection.**
- **Presentation:**
  - **Painful red eye**
  - **Photophobia**
  - **There may be a history of**
  - **contact lens use or previous herpes keratitis.**
- **Examination:**
  - **The visual acuity is reduced**
  - **Fluorescein dye reveals corneal defect**
  - **In severe bacterial infection, there may be hypopyon**
  - **(pus in the anterior chamber)**
- **Management: Refers within 24 hours**
  - **In herpes keratitis, topical acyclovir 3% 5X a day for one week . About 1-2 people in 1000 will develop at least one episode of active herpes simplex eye infection at some stage in their life.**
  - **In bacterial corneal ulcer, the patient may be admitted for intensive antibiotic treatment if severe or treated as an out-patient if mild.**



Subconjunctival haemorrhage

- **Presentation:**
  - **May be related to trauma but the majority occurs spontaneously.**
  - **Some may be precipitated by severe prolonged coughing.**
  - **Redness may be limited to one part of the eye or the whole eye.**
- **Examination:**
  - **The redness looks like blood under the conjunctiva**
  - **The eye is quiet**
  - **Normal visual acuity**
- **Management:**
  - **The condition looks alarming but resolves within two weeks.**
  - **Reassurance is all that is needed.**
  - **Check the blood pressure in elderly patient**
  - **Refer the patient only if the subconjunctival haemorrhage is traumatic**
- **Figure 1. This patient presented with a painless red eye caused by subconjunctival haemorrhage. Note that the eye is quiet and the redness of the conjunctiva is uniform.**



Sudden Painless Visual Loss

- **History:**
- **Transient visual loss (like a curtain coming down, this is suggestive of**
- **amourosis fugax**

- **Visual loss or field loss preceded by sudden onset floaters and flashing light (photopsia), this is suggestive of**
- **retinal detachment**

- **History of poorly controlled diabetes and laser treatment to the retina, this is suggestive of**
- **vitreous haemorrhage**

- **Headache +/- jaw claudication (pain in the jaw on eating) in the elderly , suggestive of**
- **Temporal arteritis**

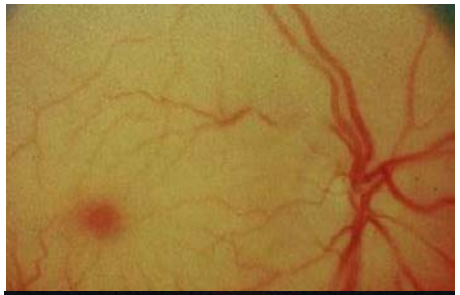
- **Pain on eye movement in young patients , suggestive of**
- **optic neuritis**

Sudden Painless Visual Loss

- Transient Loss of vision (minutes)
  - Unilateral
    - Amaurosis fugax
    - Ischemic Optic Neuropathy
  - Bilateral
    - Vertebrobasilar insufficiency
  - Unilateral or Bilateral
    - Migraine
- Sudden Painless Loss of Vision
  - Retinal artery or vein occlusion
  - Vitreous Haemorrhage
  - Retinal detachment
  - Optic neuritis +/- pain

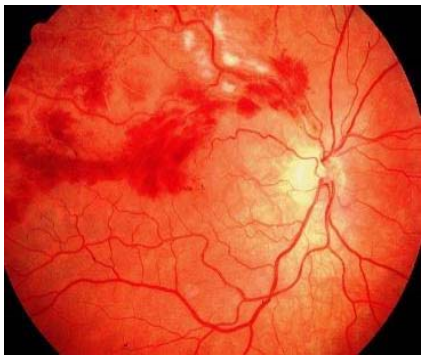
Central or branch retinal artery occlusion

- Occlusion of the retinal artery may be caused by arteriosclerotic changes, embolus (from heart or carotid artery) or inflammation (rare) . It has an estimated incidence of 0.85/100,000/year.
- History:
  - Sudden painless visual loss which may be complete (due to central retinal artery occlusion) or partial (due to branch retinal artery occlusion)
  - Patient usually have a history of hypertension or heart disease
- Examination:
  - The visual acuity is reduced in CRAO but may be normal in BRCO.
  - Relative afferent pupillary defect is present in central retinal artery occlusion
  - The retinal arteries are narrow or collapsed.
  - In CRAO, the fovea shows a cherry-red spot against the white infarcted retina.
  - In BRAO the white infarcted retina corresponds to the occluded retina.
  - Emboli may be seen in the arteries if the cause is emboli
- Management:
  - Immediate referral if the visual loss is less than 6 hours
  - Treatment involves the use of intravenous acetazolamide and globe massage t intraocular pressure and hopefully re-establish the arterial flow.
  - Further management aim to uncover any underlying diseases such as hypertension, cardiac or carotid thrombus. An ESR is usually performed in the absence of obvious embolus to exclude arteritic causes.
  - Long term low dose aspirin is advised to reduce the risk of occurrence.



Central or branch retinal vein occlusion

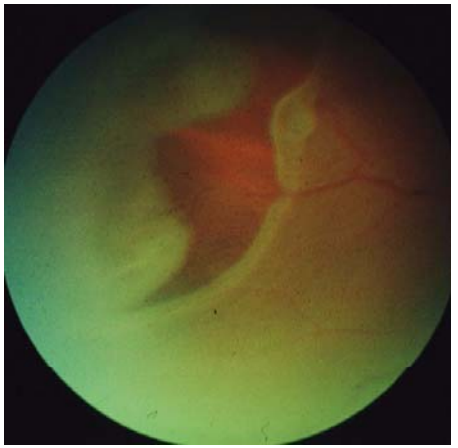
- **Retinal vein occlusion is a common vascular disorder caused by impaired venous blood flow. It is second only to diabetes mellitus as a vascular cause of impaired vision. 2 per 1,000 in those >40 years and 5.4 cases per 1,000 aged >64 years. There is an equal sex distribution.**
- **Presentation:**
  - **Sudden painless blurred vision**



- **Examination**
  - **The visual acuity is reduced +/-**
  - **Relative afferent pupillary defect +/-**
  - **Ophthalmoscopy reveals extensive retinal haemorrhage**
- **Management: Refer within one week.**
- **Although there is no immediate treatment that can restore the vision, it is important to examine the patient for hypertension and glaucoma. A blood test is usually performed for full blood count, ESR and in young patients auto-immune screening.**
- **Follow-up in the clinic is arranged so that those at risk of neovascular glaucoma may be treated with laser pan-photocoagulation**

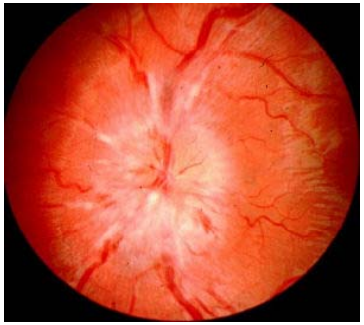
Retinal detachment

- **Incidence is about 1 in 10,000 with a prevalence of about 0.3% of the general population and a lifetime risk of 3% by the age of 85.**
- **History:**
  - **A recent history of floaters and flashes**
  - **Curtain coming across the vision**
- **Examination:**
  - **Visual acuity variable depending if the macula is involved.**
  - **Visual field defect**
  - **Ophthalmic examination in a dilated pupil shows greyish retina, hole and tear may be seen.**
- **Management:**
- **Refer the patient the same day**
- **Patients will require surgical management which consists of sealing the retinal breaks (using cryotherapy or laser) and relieving the vitreous traction (vitrectomy).**



Ischaemic optic neuropathy

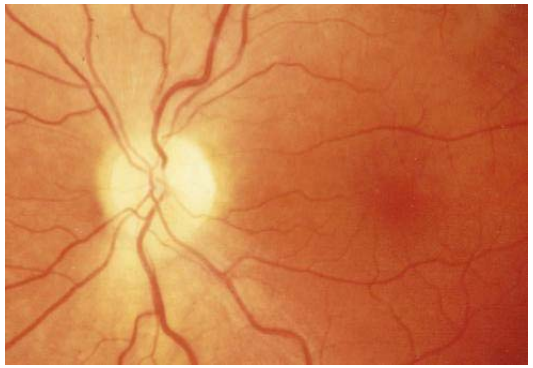
- In ischaemic optic neuropathy, there is occlusion of the small arteries around the optic disc. It is important to differentiate arteritic optic neuropathy from non-arteritic optic neuropathy. Arteritic optic neuropathy is caused by giant cell arteritis and prompt treatment with systemic steroid can prevent involvement of the contralateral eye. The incidence of giant cell arteritis increases progressively after 50 years of age and is in the region of 20 per 100,000 people older than 50 years.



- Presentation:
- Sudden visual loss persistent headache or jaw claudication suggest GCA.
- Examination:
- The visual loss is usually profound 6/60 or
- Afferent pupillary defect
- Fundal examination reveals swollen optic disc caused by occlusion of the arteries around the optic disc
- In giant cell arteritis there is tenderness over the affected artery (usually the temporal artery) and the artery is usually not palpable.
- Management:
- Refer immediately any patient with sudden visual loss and swollen disc for exclusion of giant cell arteritis.
- ESR and the C reactive protein are usually raised in giant cell arteritis but non-specific. A definite diagnosis is by temporal artery biopsy for the typical granulomatous changes in the arterial wall. However, systemic steroid is usually given while this is arranged.

Optic neuritis

- **This condition typically affects patients in the 20 - 45 age group. Occurs in 1 to 5 individuals/100 000/year.**
- **Presentation:**
  - **Impaired vision**
  - **Central field defect**
- **Examination:**
  - **Visual acuity may be as poor as perception of light**
  - **Central scotoma is typical**
  - **Impaired colour discrimination (best demonstrated with red object, the affected eye will see the red object less bright than the unaffected eye)**
  - **Relative afferent pupillary defect of the affected eye**
    Pain on eye movement especially on adduction.
  - **Fundal examination is normal as most cases have retrobulbar neuritis.**
- **Management:**
  - **Refer the patient within 24 hours for confirmation of the diagnosis**
  - **Normal or near-normal vision usually returns within 6 weeks**
  - **As treatment does not affect the outcome, unilateral optic neuritis is not treated by most ophthalmologists. However, follow-up is important as radiological investigation may be needed to exclude compressive lesion in cases where spontaneous recovery fails to recur.**



The swollen eyelids

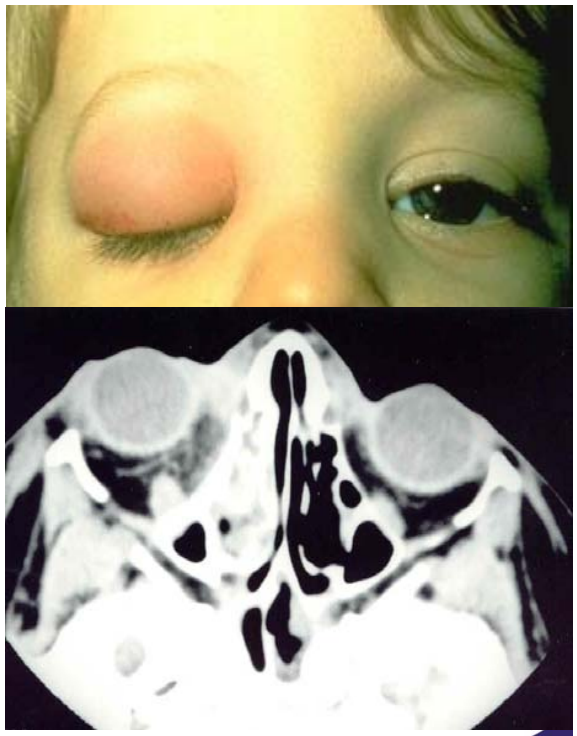
- **The <u>most common causes of swollen eyelids</u> are:**
  - **Allergy**
  - **Chalazion (Meibomian cyst)**
  - **Pre-septal or Orbital Cellulitis**
  - **Herpes Zoster**
  - **Acute dacryocystitis**

Chalazion

- **The eyelids contain many different glands which can become blocked and superinfected.**
- **Presentation:**
  - **redness, swelling, and pain in the eyelid**
  - **they may be associated conjunctivitis and purulent discharge**
- **Examination:**
  - **The visual acuity is normal unless the swelling is big.**
  - **The swelling may be at the base of an eyelash (sty or external hordeolum) or deep within the lid (meibomianitis or internal hordeolum)**
- **Management:**
  - **Topical antibiotic such as Chloramphenical drop**
  - **If the lid swelling is extensive and severe, consider superimposed orbital cellulitis which require systemic antibiotics**
  - **Referrals are not neccessary as the conditions resolves within a few days.**
  - **Refer if the swelling fails to resolve . The treatment is incision and curettage.**

Orbital Cellulitis

- **This is a potentially sight-threatening condition and the patient should be referred to the paediatricians or ophthalmologists for further management. Sight loss may result from central retinal artery occlusion or optic nerve inflammation.**
  In adults the most common infection are *Staph aureus, Strept pyogenes or Strept penumoniae*. In children , it is often secondary to infection in the adjacent sinuses and *Haemophilius* is an important pathogen.
- **Presentation:**
  - **Severe pain**
  - **Tense and red orbit with lid closure**
  - **Pyrexia**
- **Examination**
  - **Intense swelling of the lids**
  - **Proptosis**
  - **Congestion of the conjunctival and episcleral vessels**
  - **Chemosis (swollen conjunctiva)**
  - **Double vision**
- **Treatment:**
- **Refer to the ophthalmologist within 24 hours.**
- **Treatment require systemic antibiotics and analgesia.**



Herpes zoster ophthalmicus

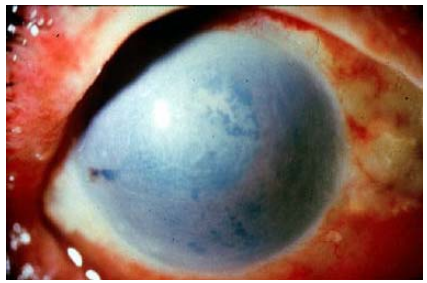
- This is caused by reactivation of herpes zoster virus in patient who previously had chickenpox. The eye is affected in 50% of zoster ophthalmicus and is increased in patients with involvement of the nasociliary nerve (rash at the tip of the nose).
- Presentation:
  - pain in the distribution of the ophthalmic nerve followed in a few days with vesicular eruption
- Examination
  - Vesicular rash affecting the scalps and lids
  - Vision may be reduced with ocular involvement (keratitis and anterior uveitis)
  - Swollen lids may make eye examination difficult
  - Ocular injections
  - Discharge from conjunctivitis
- Management:
  - Oral acyclovir is useful in speeding up the resolution of the rash
  - Analgesia should be given as the condition is very painful
  - Conjunctivitis is common and does not require treatment
- Refer to the ophthalmologists within 24 hours from seeing for exclusion of ocular involvement such as iritis and keratitis.

Acute dacryocystitis

- This is caused by inflammation of the lacrimal sac. It is often associated with obstruction of the nasolacrimal duct with watering of the eye. Infection are often due to streptococcus and staphylococcus.
- Presentation:
  - Painful swelling at the nasal side of the lower lid.
- Examination:
  - Visual acuity is normal.
  - The swelling is tense and tender
  - In severe cases, the whole of the lower lid may be swollen due to superimposed cellulitis
- Management:
  - Refer the patient to the ophthalmologists within 24 hours.
  - High dose systemic antibiotic is required either orally or by intravenous.
  - Incision of the swelling should be avoided as this can cause fistula formation
  - Most patient will require dacryocystorhninostomy (an artificial passage is created between the lacrimal sac and the nasal cavity to bypass the blockage) when the acute episode settle.

Chemical burn

- **Exposure of the eye to any chemical can cause significant damage to the anterior segment. Industrial agents containing alkali or acid are especially devastating to the eye. Alkalis are more dangerous than acids. Chemical burn is one condition where immediate treatment should precede examination as the amount of damage is related to the duration of the exposure.**



- **Management:**
- **Wash the eye with copious amounts of water with the eye open.**
- **If the patient had severe blepharospasm. Instill topical anaesthesia**
- **If the burn is caused by household detergent and there was minimal discomfort then referral is not necessary**
- **If the burn is caused by industrial agents or any unknown agents, refer the patient to the eye casualty immediately**
- **In the casualty, the pH of the eye is measured (normal pH is around 8). If the pH is too high or low further irrigation is performed.**
- **The severity is assessed by the degree of corneal opacities and limbal ischaemia (whiteness around the cornea)**

Ocular Trauma

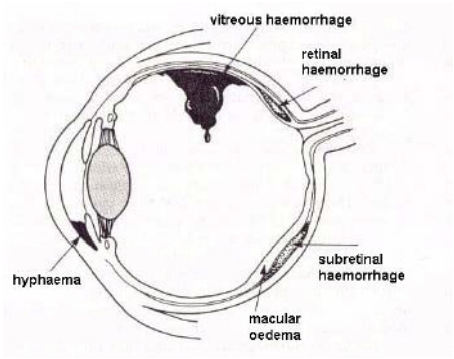
- **Ocular trauma is a common casualty referral. They can result from fight, fall, foreign body at work or road traffic accident. It is important for the referring doctor to differentiate blunt ocular trauma from perforating ocular injuries. The latter may leave the eye with an open wound which can lead rapidly to sight-threatening infection if not referred early.**
- **Ocular trauma often has medicolegal implication, it is important for the attending physician to keep a good record including the presenting visual acuity.**
- **Blunt trauma**
- **Open eye trauma**
- **Ocular foreign body**

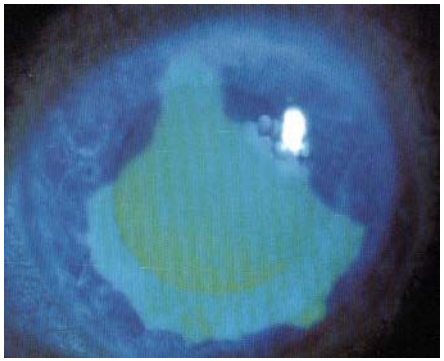
Blunt trauma

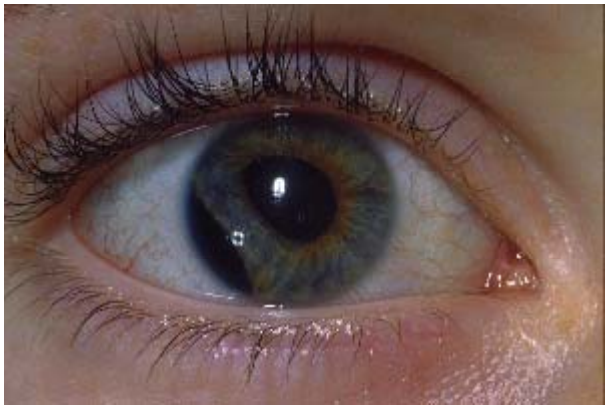
- This usually results from fist, sport injury (tennis or squash ball injury).
- Presentation:
  - Black eye is common due to skin ecchymosis
  - Painful eye results from corneal abrasion and rarely raised intraocular pressure
  - Reduced vision from hyphema or retina contusion
  - Double vision may occur due to blow-out fracture or introrbital haemorrhage
- Examination:
  - Corneal abrasion is best seen by instillation of fluorescein dye and examine with a blue light
  - Hyphema may show up as blood level in the anterior chamber
  - The pupil may be dilated due to traumatic mydriasis
  - Posterior segment examination with direct ophthalmoscope is usually difficult due to swollen lid, abrasion or hyphaema.
- Management: Refer the patient within 24 hours after seeing to exclude any serious ocular injury which may include:
    - Hyphaema, cataract, retinal oedema, retinal haemorrhage, globe perforation (rare)
    - blow out fracture.

Blunt trauma

- **Figure 1**
  Picture showing potential site of haemorrhage in blunt trauma.
- **Figure 2**
  This patient suffers a traumatic corneal abrasion. Note the fluorescein stained area of abrasion (appears as green).
- **Figure 3**
  An eye with hyphaema (note the blood clot in the anterior chamber).
- **Figure 4.**
  A child with a right iridodialysis (avulsion of the iris root) from blunt trauma.
- **Figure 5.**
  This young man was assaulted two weeks earlier and sustained a left black eye. He complained of double vision on upgaze when the swelling resolved. The picture shows restricted left upgaze caused by orbital floor fracture.





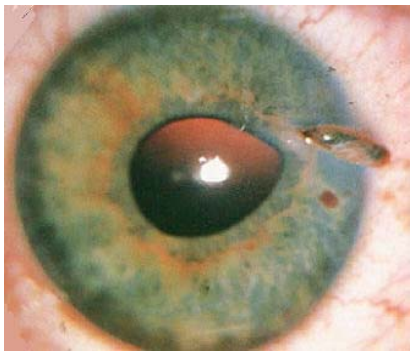


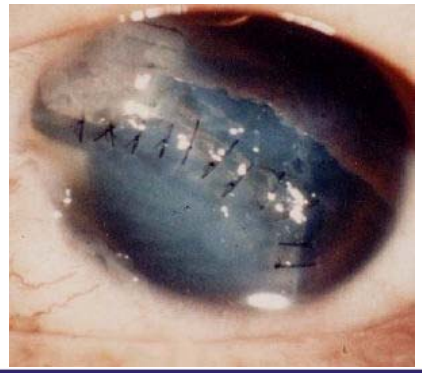
Open eye trauma

- **Penetrating eye injury requires immediate referral because of the risk of ocular infection.**
- **Presentation:**
  - **Most commonly seen in children at play with sharp object**
  - **Shattered windscreen in road traffic accidents**
  - **High velocity missiles at work place**
- **Examination: Visual acuity is reduced due to cornea distortion or blood**
- **Most injuries involves the cornea or at the corneo-scleral junctions. Therefore displacement of the iris or pupil should alert the possibility of open eye injury.**
- **Management: Refer the patient immediately to the eye casualty**

Open eye trauma

- **Figure 1.This patient sustained a left perforating eye injury when his friend threw him a sharp pencil at school. The visual acuity was hand movement. Note the displacement of the iris and pupil towards 8 O'clock where the perforation occurs at the corneoslceral junction. He was admitted for wound repair and was given antibiotic cover. The eventual visual acuity was 6/12 with glasses.**
- **Figure 2.**
  Another patient with a penetrating injury.
  Note the iris prolapse and the "tear drop" shape iris.
  It is important to exclude the presence of intraocular foreign body.
- **Figure 3.**
  This man sustained a right corneal laceration in a road traffic accident from a broken windscreen. The picture shows the cornea immediately following primary repair .



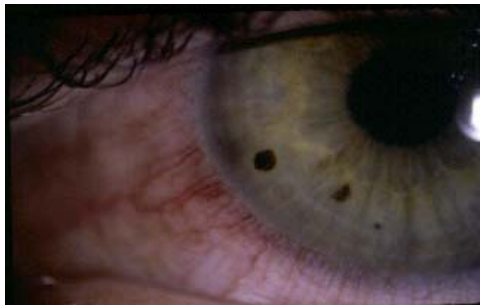


Ocular foreign body

- Perforating eye injuries from foreign body are uncommon. More commonly the foreign bodies are found in the subtarsal area and cornea where there can be easily removed.
- Presentation:
  - pain
  - red eye and
  - watery eye
- Examination: visual acuity is important, in the presence of severe pain and blepharospasm visual acuity is checked after instillation of topical anaesthesia. Intraocular foreign body can cause drop in visual acuity through cataract or vitreous haemorrhage
- note any distortion of the pupil or iris which may be caused by a perforating injury
- eversion of the upper lid is essential as foreign body may be lodged in the subtarsal area causing corneal abrasion
- Management: subtarsal or corneal foreign bodies can easily be removed with a cotton bud following instillation of topical anaesthesia.
- refer patient within 24 hours if the corneal foreign body cannot be easily or completely removed.
- any patient with suspected intraocular foreign body should be referred immediately. History suggestive of intraocular foreign body include the use of hand-hammer on metal or accidents with industrial power tool

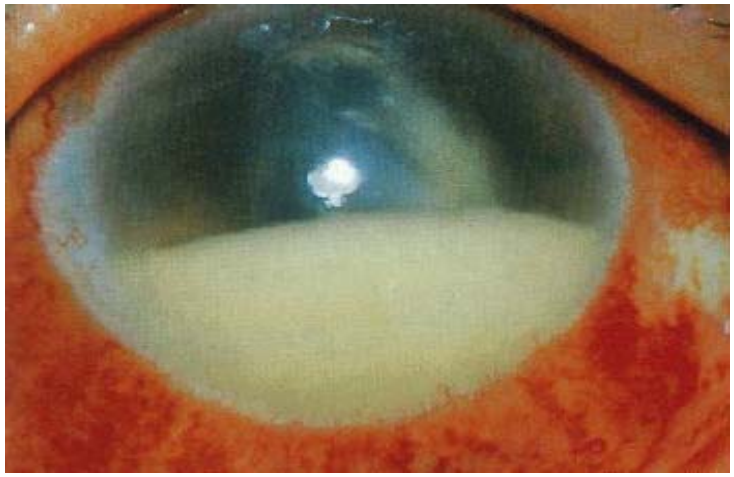
Ocular foreign body

- **Figure 1.**
  Metal corneal foreign body. This can be easily removed with a cotton bud after application of topical anaesthesia.
- **Figure 2**
  A painful eye caused by a subtarsal foreign body. Eversion of the upper lid reveals the foreign body which may otherwise be missed.
- **Figure 3**
  This welder sustained a penetrating injury at work. The picture shows a piece of iron foreign body embedded in the vitreous. This was removed within 24 hours by the vitreoretinal surgeon. Intraocular iron is toxic to the eye tissue and should be removed.



Pain following cataract operation

- **Although uncommon (1:1000 cataract cases) infective endophthalmitis should be suspected in any post-operative patients presenting with pain +/- reduced vision. This occurs most commonly within the first post-operative week. All post-cataract patients in our department are advised to contact us directly should pain or reduced vision occurs.**
- **Presentation:**
- **<u>Painful red eye</u> (usually within the first week)**
- **Reduced vision.**
- **Examination:**
- **Visual acuity is reduced.**
- **Injection of the conjunctiva +/- swollen lids**
- **Hypopyon (pus in the anterior chamber)**
- **Management:**
- **<u>Refers the patient as soon as possible</u> for exclusion of endophthalmitis . If endophthalmitis were present or suspected, the patient is admitted and treated with vitreous tap for culture and sensitivity and intravitreal antibiotics injection.**



Double vision

- It is important to differentiate binocular double vision from monocular vision. Binocular double vision disappears when one eye is covered and is usually caused by an imbalance of the extraocular muscles. There may be associated systemic diseases such as hypertension, diabetes mellitus or intracranial lesions.
- Presentation:
- Double vision
- Some may present with blurred vision or headache
- Examination:
- Determine if the double vision is binocular by getting the patient to cover one eye and observe if the double vision resolves
- Determine if the double vision is vertical or horizontal, an imbalance of horizontal muscles causes horizontal double vision whereas an imbalance of vertical muscles causes vertical double vision.
- Examine the ocular movement for any underaction of the extraocular muscles.
- Look for associated signs especially the presence of ptosis and dilated pupil (third nerve palsy)
- Management:
- If the double vision was binocular refers the patient within 24 hours. The patient will be evaluated by the orthoptic department and may be prescribed prism to fuse the images.
- If the double vision was monocular, advise the patient to consult an optician as the problem may be refractive. If the double vision can not be abolished with glasses refers the patient to the clinic.

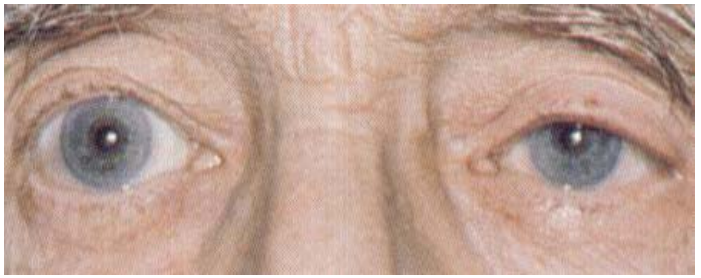
Unequal pupil size/anisocoria

- **Although an uncommon presentation to the eye casualty, causes of unequal pupil size ranges from benign to life-threatening conditions. The history and physical examination are important to determine which patients needs urgent referrals or routine clinical appointment. The main task of the attending doctor is to exclude third nerve palsy which requires immediate referrals as the patient may harbour a cerebral aneurysm.**
- **Presentation:**
- **Patients may present with unequal pupils as an incidental finding which realtived or friends comment on.**
- **More seriously are patients who present with sudden onset unequal pupils associated with headache +/- double vision**
- **Examination:**
- **Determine which is the abnormal pupil, as a rule of thumb, if the abnormal pupil is small immediate referral to the casualty is not needed. If the abnormal pupil is the small one, the anisocoria tends to increase in the dark; on the other hand, if the abnormal pupil is the large one, the anisocoria increases in bright light. A large pupil that does not respond or responds sluggishly to light is the abnormal pupil.**
- **Look for associated signs such as ptosis (third nerve palsy) and abnormal eye movement (third nerve palsy).**
- **Management:**
- **A dilated pupil with ptosis and/or poor eye movement should be assumed to be caused by third nerve palsy until proven otherwise.**
- **Also refer unequal pupils associated with head injury to the eye casualty within 24 hours**
- **Unequal pupils without other associated signs can be referred to the clinic**

Unequal pupil size/anisocoria

- **Figure 1.**
  This 70 year-old man presented with a sudden onset left dilated pupil with ptosis and ocular palsy. He also suffered from headache. He was seen at the eye casualty and was referred to the neurosurgeon. MRI scan with contrast revealed a posterior communicating artery aneurysm which was clipped surgically.

- **Figure 2**
  This man had unequal pupils with the left pupil being smaller. Note the partial ptosis. The patient had a left Horner's syndrome. He was referred to the clinic for further evaluation. In Horner's syndrome, it is important to exclude pathological process such as tumour in the pulmonary apex. Once this is excluded, most cases are benign.



Guidelines for ocular referrals

- Immediate referrals
- Red eye
  - Acute glaucoma
  - Painful red eye after cataract surgery
- Trauma
  - Chemical burn
  - Corneal laceration
  - Globe perforation
- Sudden visual loss
  - Temporal arteritis
  - Retinal artery occlusion
- Painful third nerve palsy with dilated pupil

Guidelines for ocular referrals

- Same day (within 24 hours)
- Red eye
  - Iritis
  - Corneal infection
- Trauma
  - Blunt trauma
  - Corneal abrasion
  - Foreign body
- Swollen lids
  - Herpes zoster with eye involvement
  - Orbital cellulitis
- Sudden visual loss
  - Vitreous haemorrhage
  - Retinal detachment

Guidelines for ocular referrals

- **Same week**
  - **Persistent conjunctivitis**
  - **Episcleritis**
  - **Facial nerve palsy**