全国高等医药院校规划双语教材

Bailey & Love

外科学

SHORT PRACTICE OF SURGERY

第24版

原著 R.C.G. Russell
Norman S. Williams
Christopher J.K. Bulstrode

主编 陈孝平 刘允怡
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CHAPTER 43

THE EYE AND ORBIT

LEARNING OBJECTIVES

- To have a better understanding of common ocular disorders
- To recognise ophthalmic symptoms and specific signs
- To appreciate the value of special tests and investigations
- To know when specialist referral is appropriate

PERIORBITAL AND ORBITAL SWELLINGS

Swellings related to the supraorbital margin

Dermoid cysts

Dermoid cysts are usually external angular cysts although they may occur medially (Fig. 43.1). They often cause a bony depression by their pressure, and may have a dumb-bell extension into the orbit. They can also erode the orbital plate of the frontal bone, to become attached to dura, and, for this reason, it is important to image the area by computerised tomography (CT) before excision.

Neurofibromatosis

Neurofibromatosis may also produce swellings above the eye. The diagnosis can usually be confirmed by an examination of the whole body, as there are often multiple lesions. Proptosis can also result (Fig. 43.2). Other ophthalmic features may be present.

Swellings of the lids

Meibomian cysts (chalazion)

These are the most common lid swellings (Fig. 43.3). A Meibomian cyst is a chronic granulomatous inflammation of a Meibomian gland. It may occur on either upper or lower lids and presents as a smooth, painless swelling. It can be felt by rolling the cyst on the tarsal plate. It is distinguished from a stye (hordeolum), which is an infection of a hair follicle, usually painful. Persistent Meibomian cysts are treated by incision and curettage from the conjunctival surface. Styes are treated by antibiotics and local heat.

Basal cell carcinomas (rodent ulcers)

This is the most common malignant tumour of the eyelids (Fig. 43.4). It is locally malignant, is more common on the lower lids, and usually starts as a small pimple that ulcerates and has raised edges. It is easily excised in the early stages, and can be treated with local radiotherapy if too big to be excised (Box 43.1). More extensive lesions may require specialist dermatological techniques such as Mohs' surgical excision.

Heinrich Meibom (Meibomius) | 1638–1700. Professor of Medicine, History and Poetry, Helmstadt, Germany. Described these glands in 1666.

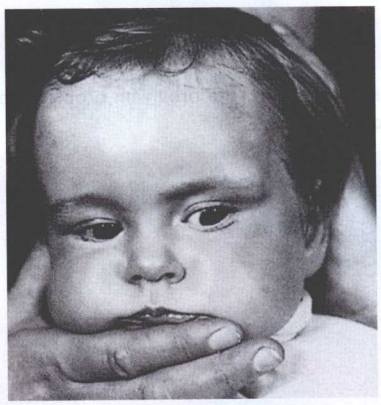

Figure 43.1 External angular dermoid.

Box 43.1

Basal cell carcinomas

- Basal cell carcinomas are the most common malignant eye tumour
- Treatment is by excision with care not to deform the lid
- All unusual lesions should be biopsied

Other lid swellings

These can occur but are less common. These include sebaceous cysts, papillomas, keratoacanthomas, cysts of Moll (Fig. 43.5) (sweat glands) or Zeis (sebaceous glands) and molluscum contagiosum.

Jacob Antonius Moll | 1832–1914. Ophthalmologist, The Hague, The Netherlands. Described these glands in 1857.
Edward Zeis | 1807–1868. Professor of Surgery, Marburg, Germany (1844–50), and later worked in Dresden. Described these glands in 1835.

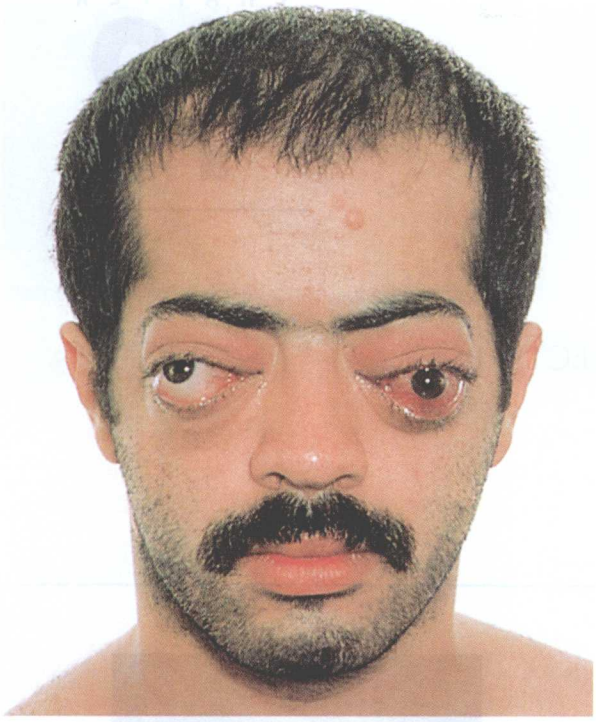

Figure 43.2 Neurofibroma in the orbit with proptosis, and also similar lesions in the forehead.

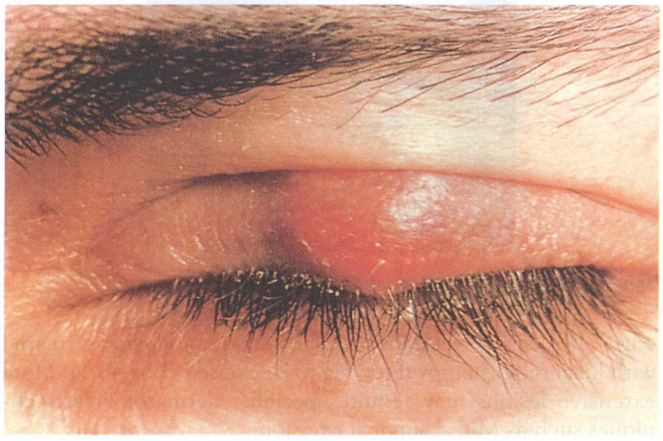

Figure 43.3 Meibomian cyst (courtesy of Mr D. Spalton, FRCS).

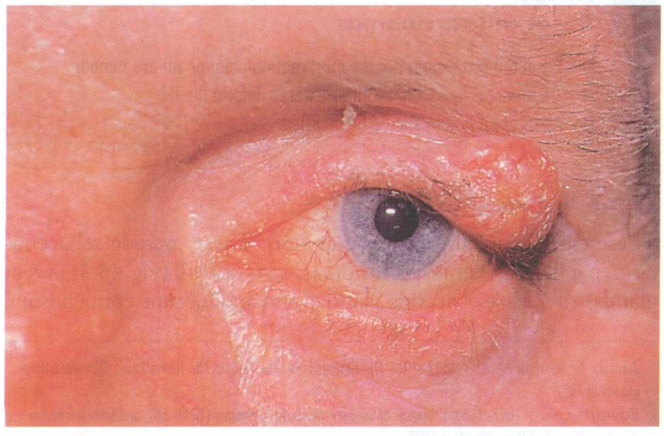

Figure 43.4 Rodent ulcers (courtesy of Mr J. Beare, FRCS).

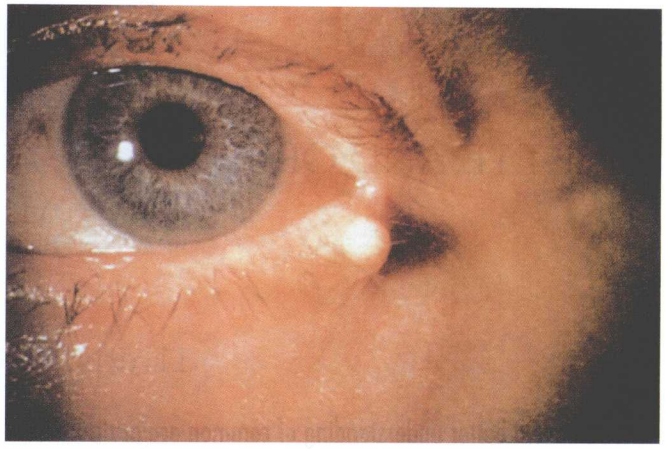

Figure 43.5 Cyst of Moll.

When molluscum contagiosum occurs on the lid margin, they can give rise to a mild chronic keratoconjunctivitis and should be curetted or excised.

Carcinoma of the Meibomian glands and rhabdomyosarcomas are rare lesions; they need to be treated radically. Atypical or Meibomian cysts that recur frequently should be biopsied.

Swellings of the lacrimal system

Lacrimal sac mucocele

This occurs from obstruction of the lacrimal duct beyond the sac, and results in a fluctuant swelling that bulges out just below the medial canthus. It can become infected to give rise to a painful tense swelling (acute dacryocystitis). If untreated, it may give rise to a fistula. Treatment is by performing a bypass operation between the lacrimal sac and the nose [a dacryocystorrhinostomy (DCR)]. Watering of the eye can occur due to eversion of the lower lid (ectropion), which causes loss of contact between the lower punctum and the tear film, or from reflex hypersecretion due to irritation of inturning lashes in entropion, and these must be distinguished from a mucocele.

Lacrimal gland tumours

Pathologically these resemble parotid tumours (Chapter 49). These are swellings of the gland, which lie in the upper lateral aspect of the orbit, and eventually they lead to impairment of ocular movements and displacement of the globe forwards, downwards and inwards. They can be pleomorphic adenomas with or without carcinomatous change, carcinomas or mucoepidermoid tumours.

Orbital swellings

If these reach any size they result in displacement of the globe and limitation of movement. A full description of these is outside the realm of the text, but some of the most common causes include the following.

- *Pseudoproptosis*. This results from a large eyeball, as seen in congenital glaucoma or high myopia.
- *Orbital inflammatory conditions* result in orbital cellulitis (Fig. 43.6).

- *Haemorrhagic lesions* occur in the orbit, after trauma or retrobulbar injections.
- *Neoplasia* affects the lacrimal gland, the optic nerve, orbital walls and tissues and the nasal sinuses, for example glioma (neurofibromatosis) (Fig. 43.2), meningioma and osteoma (Fig. 43.7).
- *Dysthyroid exophthalmos* (Figs 43.8–43.10) may be unrelated to active thyroid disease but can start after thyroidectomy and may need urgent tarsorrhaphy, large doses of steroids or even orbital decompression if the eyeball is threatened by exposure or optic nerve compression. This is most easily done into the nasal sinuses (Chapter 47). CT and magnetic resonance imaging (MRI) scans are useful in diagnosis.
- *Pseudotumour*, or malignant lymphoma.
- *Haemangiomas* of the orbit (Fig. 43.11).
- *Tumour secondaries or metastases*. These are rare. In children they usually come from neuroblastomas of the adrenal gland, whereas in adults the oesophagus, stomach, breast and prostate can be sites of primary lesions.

Diagnostic aids

Diagnostic aids include: radiography, CT, MRI, ultrasonography and, less commonly, tomography and orbital venography.

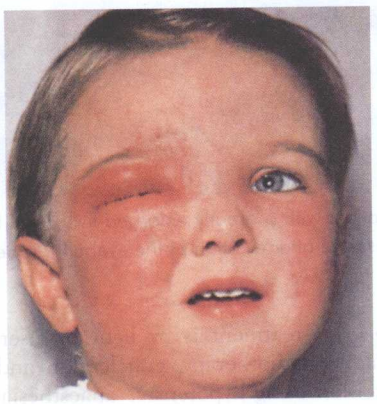

Figure 43.6 Orbital cellulitis.

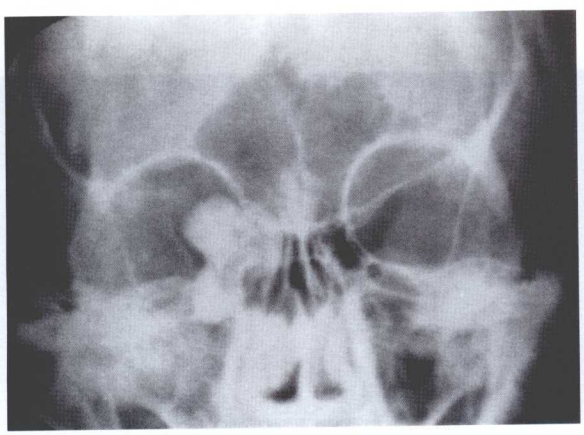

Figure 43.7 Radiograph showing an osteoma on the nasal side of the orbit giving rise to proptosis.

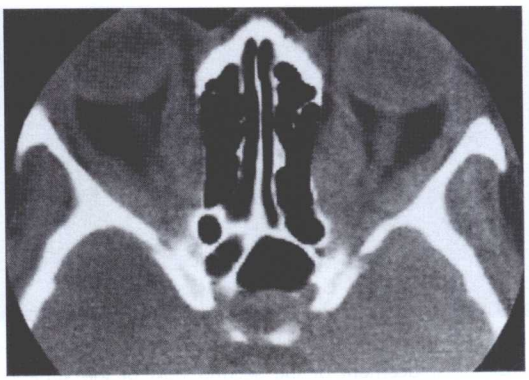

Figure 43.8 Computerised tomogram of orbit in dysthyroid exophthalmos, showing swollen muscles (courtesy of Dr Glyn Lloyd).

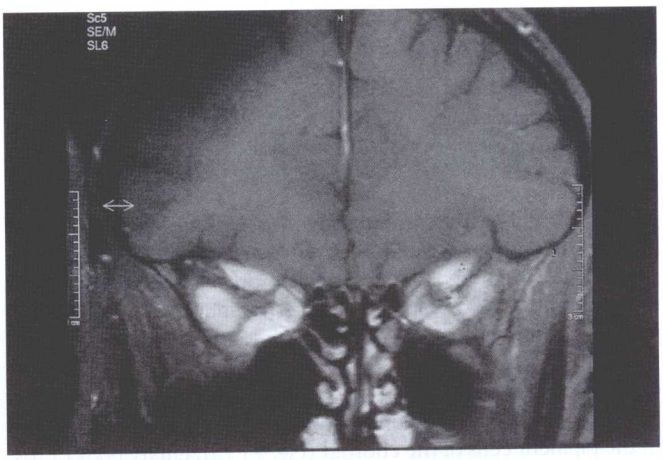

Figure 43.9 Magnetic resonance imaging (MRI) scan of coronal view of the orbit, showing enlarged muscles in thyroid disease (courtesy of Dr Juliette Britton).

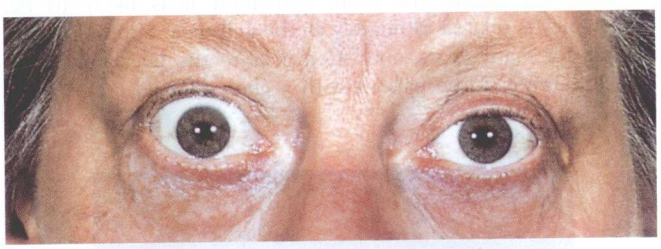

Figure 43.10 Exophthalmos in dysthyroid eye disease.

Treatment

Treatment is directed to the cause of the lesion if at all possible, taking care to prevent exposure of the eye, diplopia or visual impairment from optic nerve compression.

INTRAOCULAR TUMOURS

Children

Retinoblastoma is a multicentric malignant tumour of the retina, which can be bilateral. Some are sporadic, but many are hereditary. Children with a family history should be carefully monitored from birth (Box 43.2). It is often not spotted until the tumour fills the globe and presents as a white reflex in the pupil or as a squint

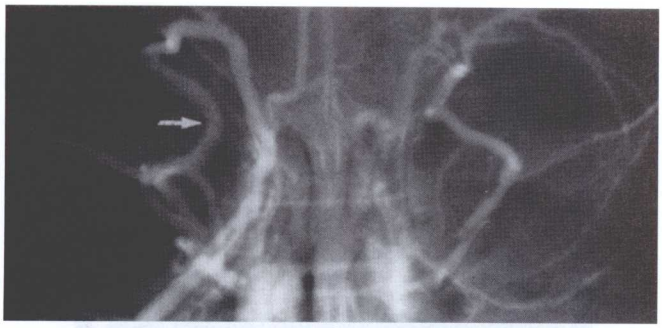

Figure 43.11 Capillary haemangioma in a child. Orbital venogram demonstrates displacement of the second part of the superior ophthalmic vein (arrow) (courtesy of Dr Glyn Lloyd).

Box 43.2
Intraocular tumours

- All children with a squint should have a fundal examination to exclude a retinoblastoma
- A blind painful eye may hide a melanoma

(Fig. 43.12). The differential diagnosis includes retinopathy of prematurity, primary hyperplastic vitreous and intraocular infections. If the tumour is large, enucleation may be required, but radiotherapy, cryotherapy or laser treatment can cure small lesions. Liaison with a paediatric oncologist is mandatory.

Adults

Malignant melanoma is the most common tumour and it originates in the pigment cells of the choroid (Fig. 43.13), ciliary body or iris. It can present with a reduction in vision, a vitreous haemorrhage or by the chance finding of an elevated pigmented lesion in the eye. Growth can be rapid or fairly slow; as a general rule, the more posterior the lesion, the more malignant it is likely to be. Malignancy is related ultimately to the cell type. Spread is often delayed for many years, and often goes to the liver, hence the advice 'beware of the patient with a glass eye and an enlarged liver' (Fig. 43.14). Treatment is by light or laser coagulation, radioactive plaque, radiotherapy, enucleation and, in selected cases, local excision using hypotensive anaesthesia. Diagnosis is made either by direct observation and or by ultrasound, which shows a solid tumour (Fig. 43.15).

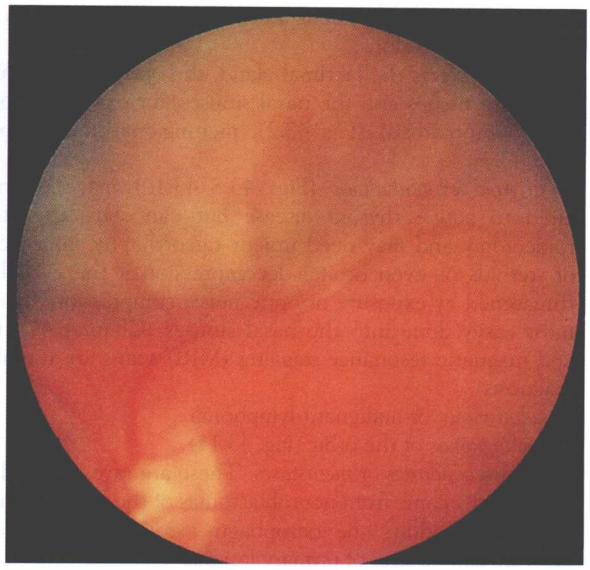

Figure 43.13 Choroidal melanoma.

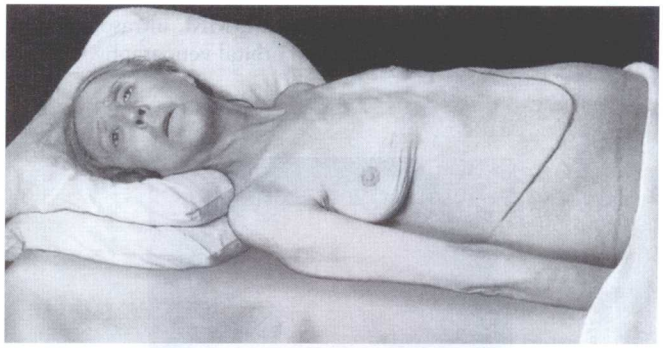

Figure 43.14 Patient with a greatly enlarged liver, who for many years had worn a glass eye after excision of the eyeball for melanoma.

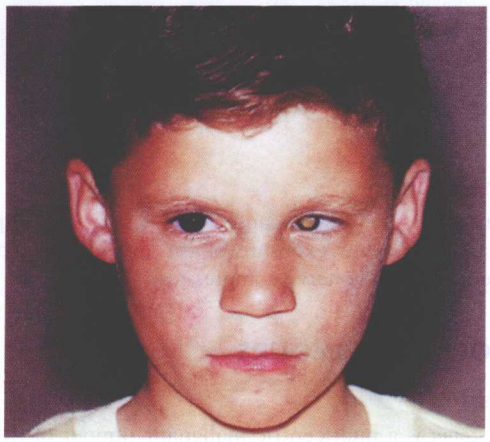

Figure 43.12 Retinoblastoma giving rise to a white pupillary reflex. This child was first seen with a convergent squint and discharged without a fundus examination. He was next seen many years later with a 'white reflex' and died soon after diagnosis (courtesy of M.A. Bedford, FRCS).

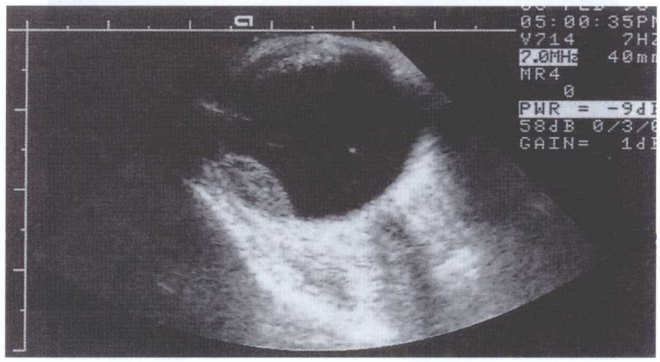

Figure 43.15 B-scan showing choroidal melanoma (courtesy of Dr Marie Reston).

INJURIES INVOLVING THE EYE AND ADJACENT STRUCTURES

Corneal abrasions and ulceration

The cornea is frequently damaged by trauma and foreign bodies (Fig. 43.16). Ulceration can occur with infection or after damage to the facial nerve (Chapters 57 and 49). Post-herpetic ulceration is common and serious if not treated. Fluorescein instillation illuminated by blue light shows up corneal ulceration at an early stage (Box 43.3). Treatment is by protection (eye pads, tarsorrhaphy or a bandage contact lens), and antibiotics topically and rarely systemically: 0.5% chloramphenicol or ofloxacin eye drops are commonly used. The eye is made more comfortable by the use of mydriatics such as homatropine or cyclopentolate. Herpes simplex ulcers are treated with acyclovir ointment. In countries in the Far and Middle East, chronic infection with trachoma can cause corneal opacification and blindness. Corneal grafting is the only cure for an opaque cornea. Rarely, osteo-odonto keratoprosthesis can be attempted in very severe cases of opaque corneas that are not suitable for grafting. *Acanthamoeba* is a rare serious cause of corneal infection. This infection usually follows the use of contact lenses. Specialist management and treatment is recommended.

Box 43.3
Corneal abrasions

- A drop of fluorescein dye illuminated by a blue light reveals even the smallest corneal abrasion

Blunt injuries to the eye and orbit

The floor of the orbit is its weakest wall, and in blunt trauma, such as fist injuries, it is often fractured without fractures of the other walls. This is called a blow-out fracture. Clinical signs are enophthalmos, bruising around the orbit, maxillary hypoaesthesia, limitation of upward gaze and diplopia. This occurs when the extraocular muscles or orbital septa become trapped in the fracture, and can be identified as a soft-tissue mass in the antrum on a radiograph (Fig. 43.17), although CT scans or tomograms may be necessary. Surgical repair of the orbital floor with freeing of the trapped contents may be necessary if troublesome diplopia persists

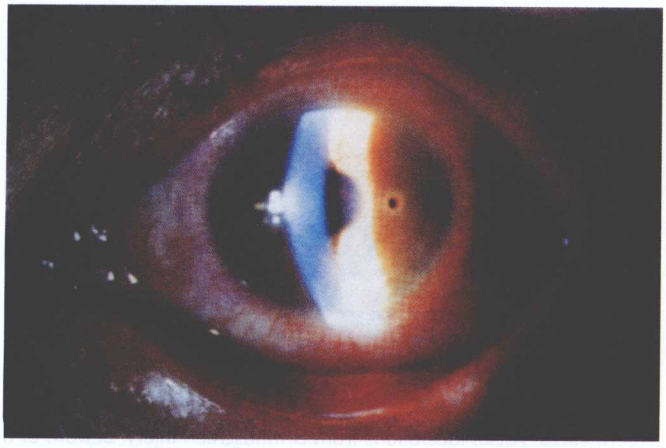

Figure 43.16 Corneal foreign body.

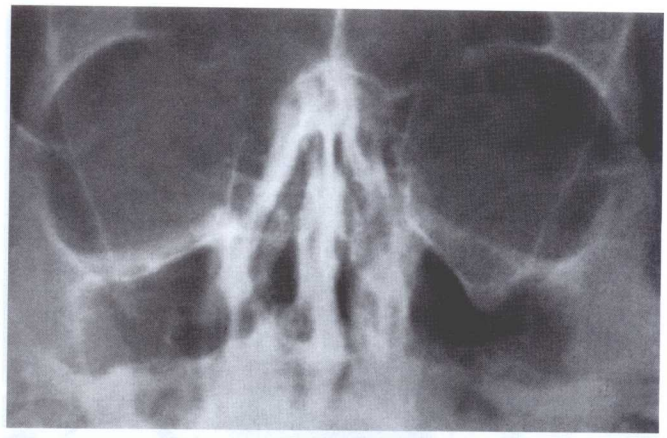

Figure 43.17 Radiograph showing a blow-out fracture of the orbit (left) with soft tissue in the antrum (courtesy of Dr Glyn Lloyd).

or enophthalmos is marked. If an orbital haemorrhage is too extensive to examine the eye, it may be necessary to examine the eye under anaesthesia because there may be a hidden perforation of the globe. Injuries to the lids and lid margins must be repaired, and if the lacrimal canaliculi are damaged they should be repaired if possible, especially the lower canaliculus, because 95% of tear drainage goes through it.

Blunt injuries can also cause damage to the optic nerve, which can result in blindness and a total afferent nerve defect (Figs 43.18 and 43.19).

Concussional injuries

Concussional injuries of the eye can give rise to several problems, which include the following.

- *Iritis*. Inflammation, treated with topical steroids.
- *Hyphaema* (blood in the anterior chamber) (Fig. 43.20). Rest and sedation, particularly in children, are advised because the main danger in this condition is secondary bleeding, resulting in an acute rise in intraocular pressure and blood staining of the cornea. The use of antifibrinolytic agents (ε-aminocaproic acid) has been advocated and, if the pressure rises, surgery to wash out the blood may be necessary.
- *Subluxation of the lens* is suspected if the iris, or part of the iris, 'wobbles' on movement (iridodonesis).

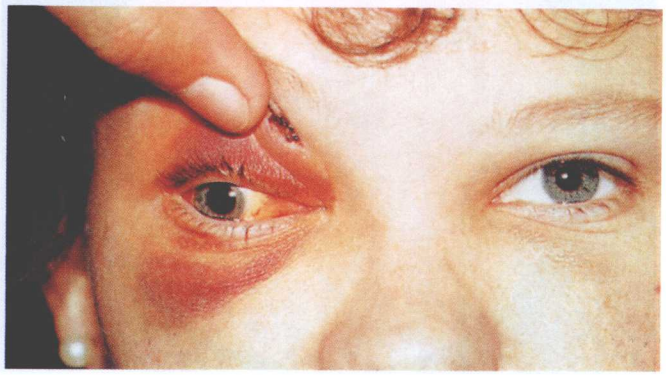

Figure 43.18 Injury from a ski stick into the right brow. Vision reduced to 'no perception of light' (courtesy of J. Beare, FRCS).

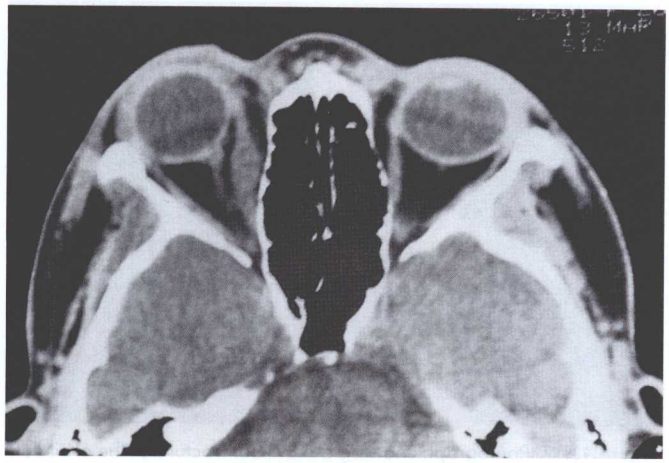

Figure 43.19 Scan of orbit from Fig. 43.18, showing a massive swelling of medial rectus (courtesy of J. Beare, FRCS).

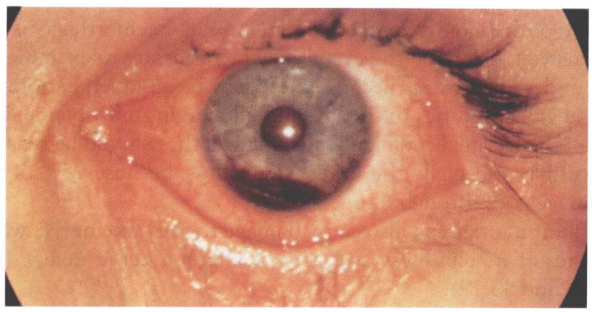

Figure 43.20 Hyphaema. Blood in vitreous chamber after concussional injury.

- *Secondary glaucoma* often associated with recession of the angle.
- *Retinal and macular haemorrhages and choroidal tears* (Fig. 43.21).
- *Retinal dialysis*, which may lead to a retinal detachment and permanent damage to vision (Fig. 43.22).

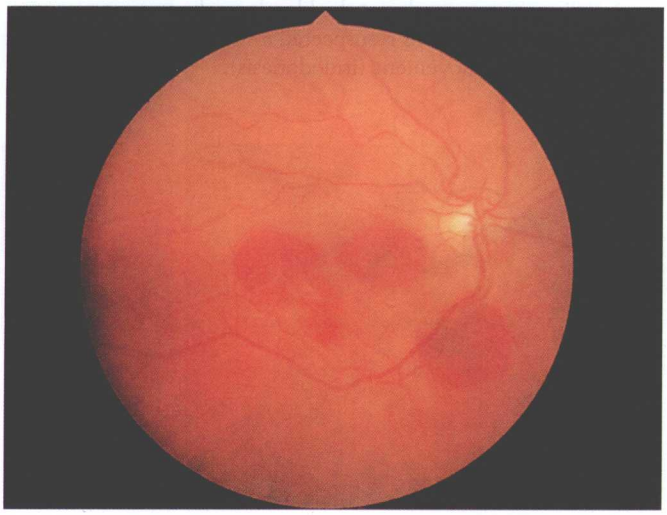

Figure 43.21 Retinal haemorrhage from a cricket bat injury (courtesy of J. Beare, FRCS).

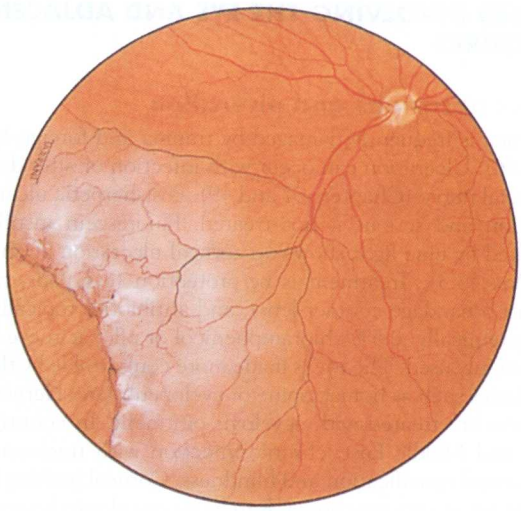

Figure 43.22 Retinal dialysis after concussional injury.

Penetrating eye injuries

These occur when the globe is penetrated, often in road traffic and other major accidents (Fig. 43.23), and also in injuries from sharp instruments. In the UK, the seat belt law has reduced this type of eye injury by up to 73% in some series. The presence of an irregular pupil suggests prolapse of the iris, and should arouse the suspicion of a penetrating injury. Treatment is prompt primary repair to restore the integrity of the globe. If a perforation is suspected, extensive eye examination should not be attempted before anaesthesia because this may lead to further extrusion of the intraocular contents. If the fundal view is poor, ultrasonography and orbital imaging are indicated. Secondary corneal grafting, lensectomy and vitrectomy have considerably improved the visual prognosis; these must be done by an experienced eye surgeon. Injuries to the optic nerves must also be excluded in severe accidents.

Intraocular foreign bodies

Intraocular foreign bodies must always be excluded when patients attend the accident and emergency department with a history of working with a hammer and chisel (Box 43.4). *Radiography of the orbits should always be performed, and ferrous and copper foreign bodies should always be removed.* B-scan ultrasonography can also

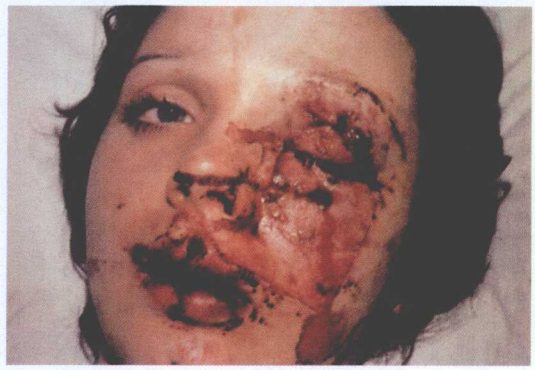

Figure 43.23 Facial lacerations from a windscreen injury. Beware of a perforating eye injury.

Box 43.4
Penetrating eye injuries

- A distorted and irregular pupil warrants the careful exclusion of a penetrating eye injury

assist in localising foreign bodies when a vitreous haemorrhage or cataract is present. CT can be used, but MRI is contraindicated.

Burns

Radiation burns

These occur after exposure to ultraviolet radiation after arc welding or excessive sunlight (snow blindness) and sun lamps. Such burns cause intense pain and photophobia due to keratitis, which starts some hours after exposure. Mydriatic and local steroid with antibiotic drops ease the condition, and healing usually occurs after 24 hours.

Thermal burns

If these involve the full thickness of the lids, corneal scarring may occur from exposure, and immediate corneal protection is necessary. A splash of molten metal may cause marked local necrosis, and may lead to permanent corneal scarring. Treatment is to remove any debris by irrigation, and to instil local atropine, antibiotics and steroids to prevent superadded infection and scarring. Lid reconstruction may be necessary.

Chemical burns

Chemical burns, and especially alkali burns, can be serious because ocular penetration occurs quickly and ischaemic necrosis can result. Immediate irrigation until the pH is neutral will ensure that the chemical is diluted as much as possible, and all particles should be removed from the fornices. Treatment can then be continued as with thermal burns. Well-fitting goggles should prevent such injuries (Fig. 43.24).

DIFFERENTIAL DIAGNOSIS OF THE ACUTE RED EYE

The importance of this is in the management of minor ocular complaints, and the recognition of conditions requiring expert attention. Possible causes of the acute red eye are as listed in Box 43.5.

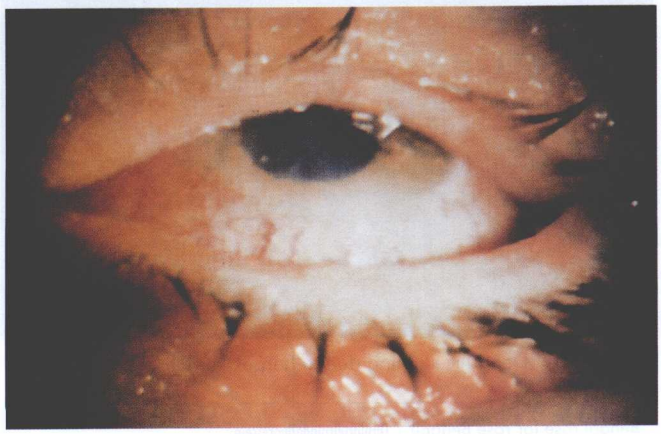

Figure 43.24 Chemical burn showing conjunctival necrosis.

Box 43.5
Causes of the acute red eye

- Subconjunctival haemorrhage
- Conjunctivitis
- Keratitis
- Uveitis
- Episcleritis and scleritis
- Acute glaucoma

Any condition with pain and/or visual impairment suggests a more serious diagnosis

Subconjunctival haemorrhage

This presents as a bright-red eye often noticed incidentally with only minimal discomfort and normal vision. Causes include coughing, sneezing, minor trauma, hypertension and, rarely, a bleeding disorder. Reassurance and treatment of the underlying cause are required.

Conjunctivitis

Symptoms are grittiness, redness and discharge. Causes are infective, chemical, allergic or traumatic. In the newborn, it can be serious; gonococcal and chlamydial infection must be excluded. Bacterial conjunctivitis is common, purulent, usually self-limiting and treated with topical broad-spectrum antibiotics. Chlamydial and adenovirus infections must be considered. Adenoviral infections usually affect one eye much more in severity and onset, tending to be more watery than sticky, and are often associated with a palpable preauricular gland.

Vernal conjunctivitis (Fig. 43.25) is a form of allergic conjunctivitis, usually worse in the spring and early summer, and often associated with other allergic problems such as hay fever. Clinically, most signs are under the upper lid, which may have a cobblestone appearance instead of a smooth surface. Giant pupillary conjunctivitis with large papillae under the upper lid may be seen in soft contact lens wearers. This is usually caused by an allergy to the sterilising solutions and may be helped by either using a preservative-free solution or using daily-wear disposable lenses.

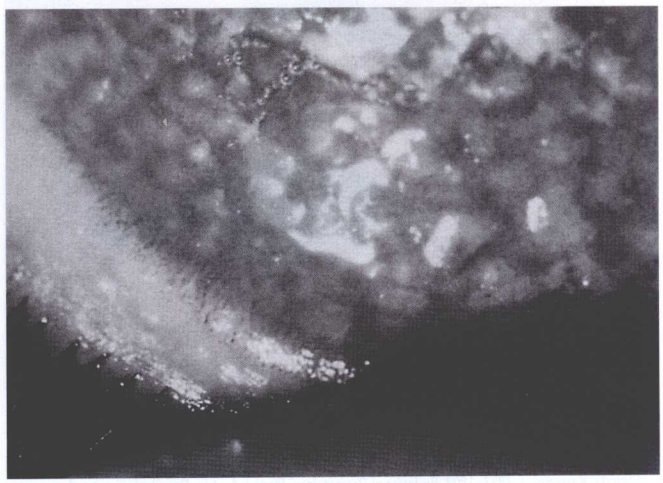

Figure 43.25 Vernal conjunctivitis (spring catarrh) showing cobblestone appearance under the upper lid.

Kaposi's sarcoma can rarely present like a subconjunctival haemorrhage (Fig. 43.26).

Considerable conjunctival irritation can be caused by the lids turning in (entropion) (Fig. 43.27), or turning out (ectropion) (Figs 43.28 and 43.29), and by ingrowing lashes. The lids should be repaired surgically to their normal position.

Vision is not commonly affected in conjunctivitis but, with some virus infections, a keratitis may be present and result in visual impairment and pain.

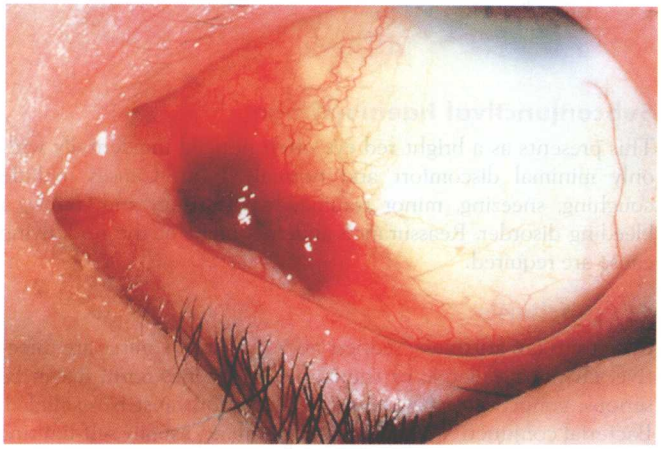

Figure 43.26 Kaposi's sarcoma of conjunctiva.

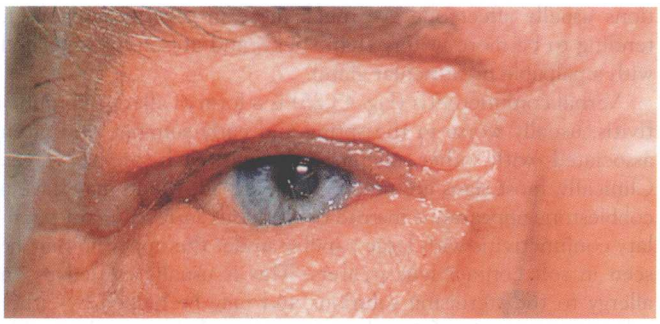

Figure 43.27 Entropion (courtesy of J. Beare, FRCS).

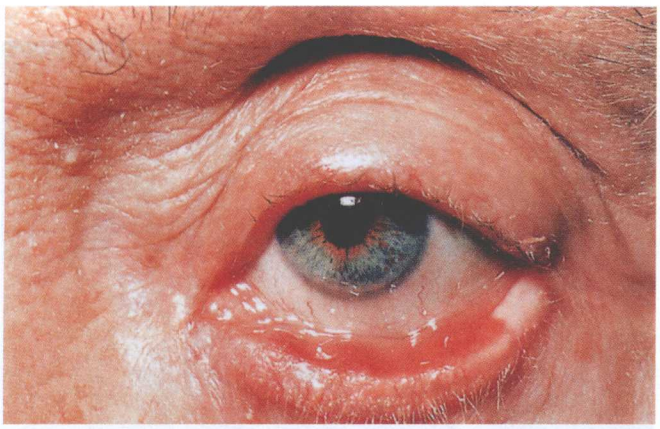

Figure 43.28 Ectropion, lower lid (courtesy of J. Beare, FRCS).

Moritz Kaposi | 1837–1902. Professor of Dermatology, Vienna, Austria. Described pigmented sarcoma of the skin in 1872.

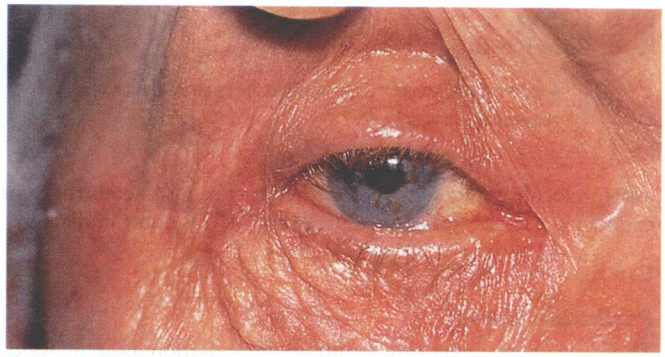

Figure 43.29 Ectropion, upper lid – chronic staphylococcal infection (courtesy of J. Beare, FRCS).

All of the other conditions are painful and usually affect vision.

Keratitis (inflammation of the cornea)

Herpes simplex infection is the most serious, and presents itself as a dendritic (branching) ulcer, shown easily by staining with fluorescein or Bengal rose. It is treated with acyclovir ointment five times per day. The use of steroid drops must be avoided as this can make the condition much worse (Fig. 43.30).

Corneal ulceration may occur due to ingrowing lashes or corneal foreign bodies, marginal ulceration and infected abrasions. Infected ulcers can occur in patients wearing soft contact lenses. Herpes zoster (shingles) affects the ophthalmic division of the fifth nerve, and can give rise to a keratitis and uveitis. It is important to exclude the use of steroid drops until a diagnosis has been made. Local anaesthetic drops should also not be given on a regular basis.

Uveitis

This can be anterior (iritis) or more rarely posterior. In anterior uveitis, the pupil will be small, sometimes irregular, there is circumcorneal injection, and there may be keratic precipitates (KPs) present on the posterior surface of the cornea. Pain, photophobia

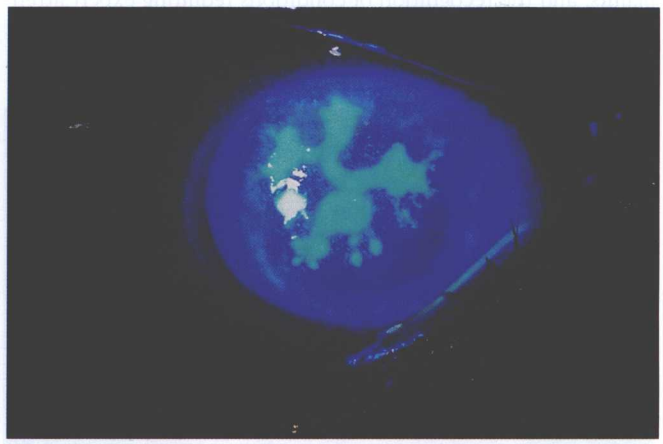

Figure 43.30 Dendritic staining due to herpes keratitis.

Bengal rose (or rose Bengal) | Dichlortetraiodofluorescein.

and some visual loss are usually present. Posterior uveitis can present with a white eye and blurred vision. It usually takes a chronic course. Granulomatous diseases, Behçet's disease, Reiter syndrome, toxoplasmosis and cytomegalovirus infection should be excluded. Topical, systemic steroids and, sometimes, immunosuppressive drugs are useful in treating these conditions.

Episcleritis and scleritis

Episcleritis or inflammation of the episcleral tissue often occurs as an idiopathic condition (Fig. 43.31).

Scleritis is a rarer, more serious, condition in which the deeper sclera is involved. There is often an associated uveitis and severe pain. Thinning of the sclera may result. Systemic non-steroidal anti-inflammatory drugs (NSAIDs) or steroids may be required in order to treat the condition adequately.

Scleritis is often associated with severe rheumatoid conditions.

Acute glaucoma

This usually occurs in older, often hypermetropic, patients. The cornea becomes hazy, the pupil oval and dilated, the vision very poor and the eye feels rock hard. In severe cases, the pain may be accompanied by vomiting, and the pain can be mistaken for one of an acute abdomen. Tonometry (intraocular measurement) is diagnostic. Urgent treatment to reduce the pressure by pilocarpine, acetazolamide and, if refractory, mannitol should be started, followed by a surgical iridectomy or laser iridotomy. The condition is usually bilateral, and the second eye usually needs a prophylactic iridotomy at the same time.

Except for a simple conjunctivitis, and subconjunctival haemorrhage, which are self-limiting, these conditions require expert treatment and a specialist opinion should be sought.

A painful eye with a third nerve palsy often signifies an intracranial aneurysm and should be investigated immediately.

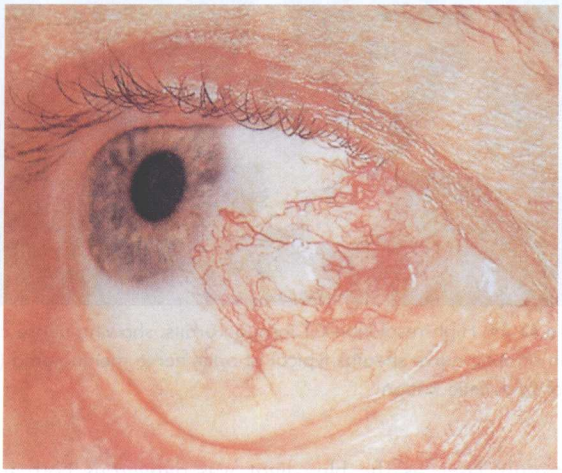

Figure 43.31 Episcleritis.

Hulusi Behçet | 1889–1948. Professor of Dermatology, Istanbul, Turkey. Described this disease in 1937.

Hans Conrad Julius Reiter | 1881–1968. President of the Health Service and Honorary Professor of Hygiene at the University of Berlin, Germany. Described this disease in 1916 while serving with the German Army in the First World War.

PAINLESS LOSS OF VISION

This may occur in one or both eyes, and the visual loss may be transient or permanent. Possible causes are:

- obstruction of the central retinal artery (Fig. 43.32);
- obstruction of the central retinal vein (Fig. 43.33);
- cranial arteritis;
- ischaemic optic neuropathy;
- migraine and other vascular causes;
- retrobulbar neuritis and papillitis;
- vitreous and retinal haemorrhages;
- retinal detachment (Fig. 43.34);
- macular hole, cyst or haemorrhage;
- cystoid macular oedema, often after surgery;
- hysterical blindness;
- cataract;
- glaucoma;
- macular degeneration.

Specialist help should be sought in any case of loss of vision. The erythrocyte sedimentation rate and C-reactive protein

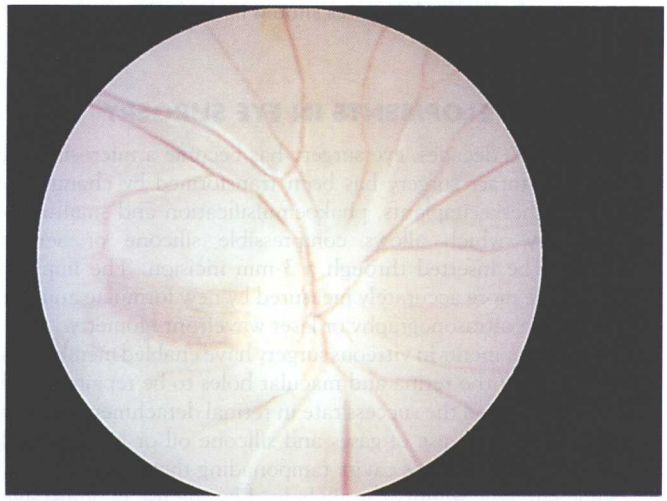

Figure 43.32 Retinal artery occlusion.

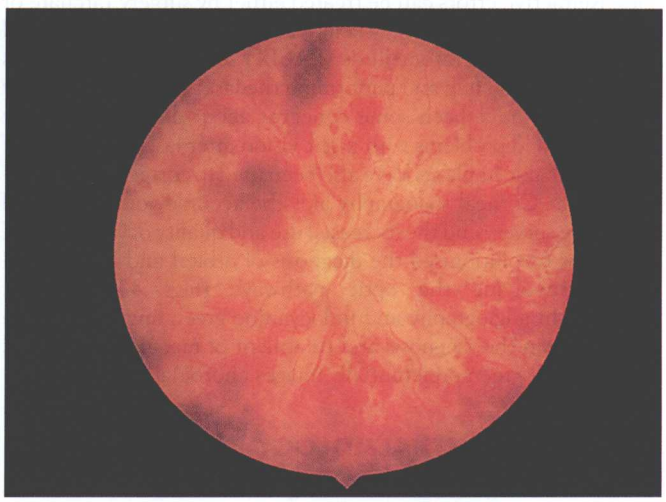

Figure 43.33 Central retinal vein occlusion.

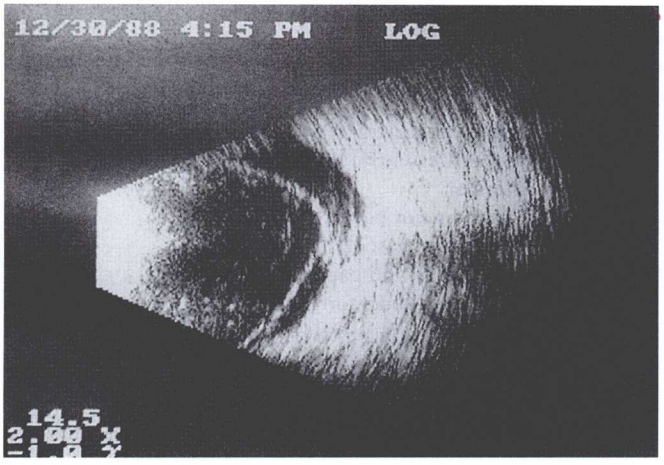

Figure 43.34 B-scan of a retinal detachment.

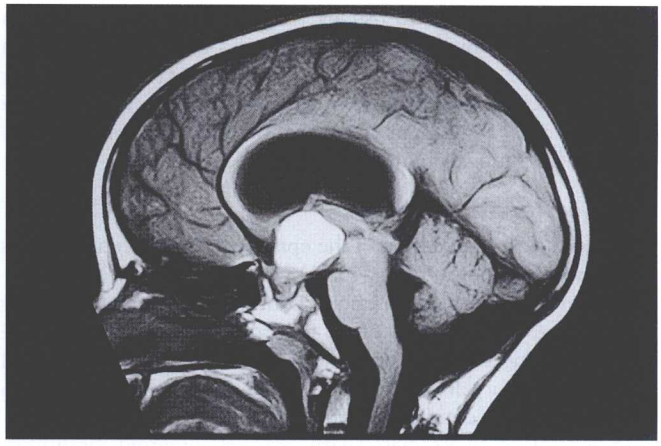

Figure 43.35 MRI scan, sagittal view. Craniopharyngioma. The mass in the suprasellar cistern is of high signal intensity owing to the proteinaceous fluid that the cyst contains (courtesy of Dr Juliette Britton).

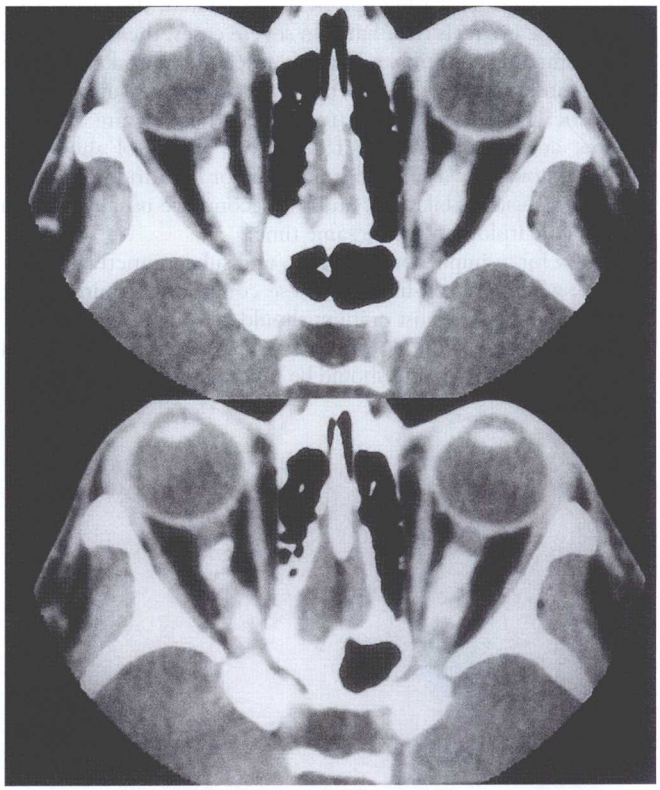

Figure 43.36 High-resolution CT through orbits, showing dense calcification of optic nerve sheaths typical of optic nerve meningioma (courtesy of Dr Juliette Britton).

should be measured immediately if cranial arteritis is suspected, and the carotid system should be examined for bruits and other signs of arteriosclerosis in cases of ischaemic optic neuropathy and central retinal artery occlusion. Glaucoma, hypertension, hyperviscosity syndromes and diabetes should be looked for in cases of central vein thrombosis.

RECENT DEVELOPMENTS IN EYE SURGERY

In the last two decades, eye surgery has become a microsurgical specialty. Cataract surgery has been transformed by changes in local anaesthesia, implants, phakoemulsification and small-incision surgery, which allows compressible silicone or acrylic implants to be inserted through a 3-mm incision. The implant power can be more accurately measured by new formulae and the use of A-scan ultrasonography or laser wavefront biometry.

The developments in vitreous surgery have enabled membranes to be peeled off the retina and macular holes to be repaired, and have also increased the success rate in retinal detachment surgery with the additional use of gases and silicone oil or heavy liquid inserted into the vitreous cavity tamponading the retina.

Some paralytic squints can be helped by the use of adjustable sutures or injections of botulinum toxin into the overacting muscles. Refractive errors can be treated either by surgery (arcuate or radial keratotomy) or by the excimer laser. These can be combined with laser *in situ* keratomeilusis (LASIK) surgery, which involves cutting a corneal flap and performing the laser surgery at a deeper level. There have been some concerns about defective contrast sensitivity and problems with night vision after laser correction of myopia. Phakic implants have also been used to correct high refractive errors. Corneal topography aids the accuracy of corneal and refractive surgery and the increased use and quality of CT and MRI scans has revolutionised the diagnosis of orbital and intracranial lesions involving the optic pathways (Figs 43.35–43.37). Fluorescein angiography and indocyanine green angiography are invaluable in the diagnosis and treatment of macular conditions. Indocyanine green preferentially images choroidal vasculature.

LASERS IN OPHTHALMOLOGY

These were originally used as coagulators. The ruby laser was superseded by the argon blue–green laser and then the argon green-only laser, as the blue light was dangerous both to the operator and to the patient's macula. Yellow and red wavelengths are also used and the doubled-frequency doubled yttrium–aluminium–garnet (YAG) laser can be used as a coagulator with a frequency of 533. The photodisruptive YAG laser was developed together with extracapsular surgery and is used for capsulotomies, iridotomies and cutting anterior vitreous bands. In its continuous mode it can be used to treat severe glaucomas.

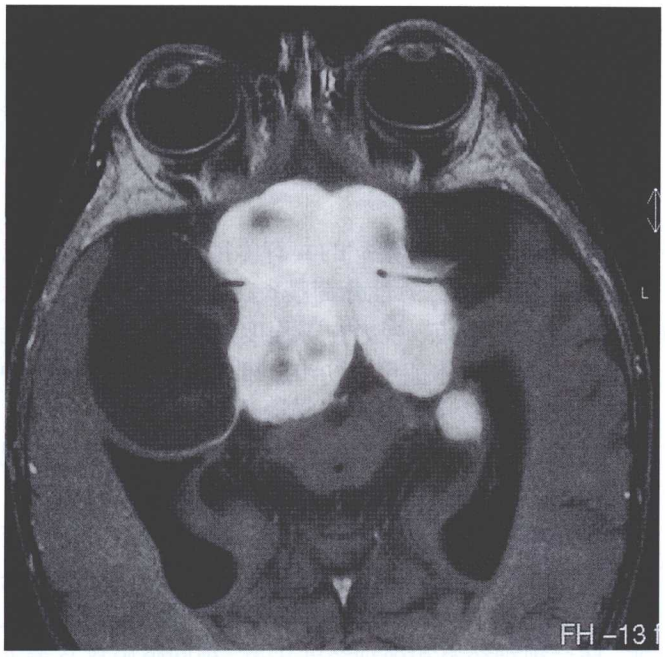

Figure 43.37 Axial enhanced MRI scan showing a mass involving the optic chiasma and extending down the optic nerves and tracts.

Holmium and erbium lasers have been used to create subconjunctival drainage in glaucoma; the KTP and holmium laser can also be used in lacrimal obstruction during endoscopic dacryocystorhinostomy (DCR) operation. CO_2 lasers are used to remove external lesions of the eyelids, and photoablative excimer lasers are used for refractive surgery. The diode laser can be used both as a retinal photocoagulator and for treating the ciliary body in advanced cases of glaucoma. Lasers combined with phakoemulsification to liquefy the human lens are being developed. Laser technology is advancing. and no doubt many new forms of lasers will be developed for use in ophthalmic surgery and assessment, diagnosis and management of eye disorders.

SURGICAL PROCEDURES

Excision of an eyeball

Indications include a blind, painful eye, a blind, cosmetically poor eye, intraocular neoplasm and, in cadavers, for use in corneal grafting.

The operation

The speculum is introduced between the lids and opened. The conjuctiva is picked up with toothed forceps and divided completely all round as near as possible to the cornea. Tenon's capsule is entered, and each of the rectus tendons is hooked up on a strabismus hook and divided close to the sclera. The speculum is now pressed backwards and the eyeball projects forwards. Blunt scissors, curved on the flat, are insinuated on the inner side of the globe, and these are used to sever the optic nerve. The eyeball can now be drawn forwards with the forceps, and the oblique muscles, together with any other strands of tissue that are still attaching the globe to the orbit, are divided. A swab, moistened with hot water and pressed into the orbit, will control the haemorrhage. If an orbital implant is inserted to give better eye movement, the muscles are sutured to the implant at the appropriate sites. The subconjunctival tissues and conjunctiva are closed in layers.

Jacques René Tenon | 1724–1816. Surgeon, La Salpetière, Paris, France.

Evisceration of an eyeball

Evisceration is preferred to excision in panophthalmitis, minimising the risk of orbital and intracranial spread with meningitis. The sclera is transfixed with a pointed knife a little behind the corneosclerotic junction, and the cornea is removed entirely by completing the encircling incision in the sclera. The contents of the globe are then removed with a curette, care being exercised to remove all of the uveal tract. At the end of the operation the interior must appear perfectly white.

Incision and curettage of chalazion (Meibomian cyst)

The lid margin is everted to allow the application of a Meibomian clamp. The ring of the clamp is placed on the palpebral conjunctiva with the granuloma in the centre. An incision is made with a small blade in the axis of the gland. The herniating granulomatous tissue is removed with a curette and the cavity is scraped clean. Recurrent cysts may have to have the cyst wall dissected away with scissors. A biopsy may be necessary in atypical or recurrent cysts to exclude malignant change.

ACQUIRED IMMUNODEFICIENCY SYNDROME AND THE EYE (see Chapter 9)

Kaposi's sarcomas, purplish or brown non-pruritic nodules or macules, are a frequent early manifestation of acquired immunodeficiency syndrome (AIDS). Commonly affecting the face, especially the tip of the nose, the lesions may involve the eyelids and the conjunctiva. They respond to chemotherapy, so excision is not usually necessary.

Fundus lesions are 'non-infective' or 'infective'. The non-infective retinopathy is a microangiopathy consisting of cottonwool spots and blot haemorrhages. These fade over several weeks and do not affect vision. The most common infective retinitis is caused by cytomegalovirus (CMV). The retinal lesions are irregular areas of white necrosis and associated scattered haemorrhages. The appearance is likened to a 'pizza pie'. The borders of the lesions expand as a 'brushfire', leaving behind atropic pigmented retina. CMV retinitis is progressive and the lesions expand over a few months so that the entire retina is involved over a period of about 6 months and causes absolute blindness.

Treatment is with a course of ganciclovir or foscarnet given intravenously. Both drugs can be injected directly into the vitreous. Long-term maintenance therapy is essential to prevent further progression. A Vitrasert is a ganciclovir slow-release implant that is surgically inserted into the vitreal cavity and anchored to the sclera. It is effective in preventing progression for 9 months.

The other retinal infections are rare and include toxoplasmosis, *Pneumocystis*, *Candida*, *Cryptococcus*, herpes zoster and syphilis.

The most effective treatment of CMV retinitis and all retinal infections is the recovery of the patient's immunocompetence. This can be achieved using antiretroviral drug combinations against HIV. When the patient's immunity is restored, the retinitis becomes atrophic. Reduced vision is permanent.

Neuro-ophthalmological complications in AIDS have been reported, most frequently as nerve palsies associated with intracranial infections with crypotococci and toxoplasmosis, or as a manifestation of an intracranial lymphoma.

小结

眼与眼眶病按解剖部位分为外眼病（眼睑泪器病、结膜病与眼眶病）、前段病（角膜病、巩膜病、虹膜睫状体疾病、白内障、青光眼）和后段病（玻璃体视网膜病）。肿瘤、眼外伤、以红眼为体征的眼部疾病及无痛性视力丧失为主诉的相关眼病等是临床上重要的常见眼病，均可累及上述部位。这些疾病的症状、体征是需要重点掌握的。

眼部疾病常见症状和体征：视力障碍，异物感，畏光，眼痛，眼分泌物增多，突眼，流泪，结膜充血、水肿，角膜水肿混浊，角膜后沉着物（KPs），瞳孔变形，眼球运动障碍。

肿瘤分为良性肿瘤（皮样囊肿、泪腺多形性腺瘤及海绵状血管瘤）和恶性肿瘤（基底细胞癌，视网膜母细胞瘤，恶性黑色素瘤）。视网膜母细胞瘤好发于儿童，常因“白瞳”现象而就诊，需及时转送有经验的眼科专科医师会诊。引起眼球突出最常见的病因是甲状腺相关眼病。

眼外伤按损伤性质分为：机械性眼外伤（钝挫伤，震荡伤，穿通伤，眼内异物）和非机械性眼外伤。后者又分为化学伤（酸碱烧伤）和物理性损伤（放射性烧伤，热烧伤）。眼外伤后要借助超声、CT及MRI等辅助检查排除眼内、眼眶异物。眼化学伤后应立即就近用大量清水冲洗，清除残留的化学物质，立即转送眼专科医师诊治。

红眼为多种眼部疾病的共有体征，常见疾病有：急性结膜炎、角膜炎、急性葡萄膜炎、急性闭角性青光眼。根据结膜充血特点、视力损害程度、角膜是否水肿、瞳孔改变及眼压等体征可以初步鉴别，一旦疑有上述四种疾病，要及时转送眼专科医师诊治。

临床上常见的无痛性视力丧失眼病包括玻璃体及视网膜出血、视网膜脱离、视网膜中央动脉/静脉阻塞、AIDS引起的巨细胞病毒性视网膜炎、黄斑洞、黄斑变性、缺血性视神经病变、球后视神经炎和视神经乳头炎、白内障、青光眼。其中，视网膜中央动脉/静脉阻塞、球后视神经炎和视神经乳头炎、视网膜脱离及黄斑洞属于眼科急诊，需要迅速转入眼专科诊治。

眼部疾病常用辅助检查：裂隙灯及眼底镜是最常用的检查手段，可以直视下发现大部分的眼部疾病；眼压测量对青光眼诊断有重要意义；荧光血管照影及靛青绿血管造影术能提示视网膜、脉络膜的血管性疾病；屈光间质混浊时，超声波检查可以了解眼内病变情况，具有独到的优越性；如与X线、CT和MRI等结合应用，可以发现眼及附属器的占位病变，骨折或异物等情况。

一旦出现眼红、眼痛、眼球突出、视力障碍等重要眼疾病症状和体征，需要及时转送眼专科医师诊治，以免贻误病情。

（葛　坚）

FURTHER READING

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