

The Eye in Clinical Practice

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SECOND EDITION



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Preface

Eye problems are common and may cause much concern to their owners as well as to the non-specialist confronted by them, who may find difficulty in confident management. This is partly due to the size of the eye and the barrier of getting to grips with the magnifying tools sometimes needed to see in detail, partly to the crowded medical student curriculum with little time to spend on the specialty, and perhaps partly to an unspoken feeling that the eye is so complicated, sensitive and delicate that it is best left 'untouched'.

We have written this book for the doctor with little or no specialized eye training (apart from very basic anatomy and physiology) who wants to approach problems with the eye and vision to decide whether he or she can cope, in a few cases what risks there may be in doing so, and when and how urgently to refer for a specialist opinion. We have tried to avoid both too formal a style and the jargon which often obscures the subject, though we have included a glossary in case any has crept in or appears in specialist correspondence about patients.

We have adopted a practical approach, explaining how to elucidate symptoms and signs without necessarily using anything more sophisticated than a vision-testing chart and an ophthalmoscope, though the extra information visible with a slit-lamp has been included when of value. Management has been suggested, with some of the common pitfalls and cautions, and a formulary deals with common eye medications, both topical and systemic. While every effort has been made to ensure that the doses mentioned are correct, the reader is advised to check dosages, adverse effects and contraindications in the current *British*

National Formulary (or *Drug Information* in the USA).

We believe this book will appeal particularly to doctors in general practice who are confronted directly by eye problems, but hope that medical students may find the practical aspects of interest and value, even though they may feel less immediate appeal in common but uncomfortable conditions such as blepharitis, dry eye and allergic conjunctivitis. The book may interest others involved in eye care such as optometrists and specialist ophthalmic nurses.

We hope we have shown that eyes are intriguing, approachable, understandable and rewarding to treat, often without needing specialist referral.

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Chapter 1 Introduction

For too many doctors, ophthalmology is a subject at the margin of their familiar territory. The word itself is difficult to pronounce and to spell. It conjures up an image of a mysterious interpretation of findings with the ophthalmoscope which many medical students in honesty are unable to see for themselves (Fig. 1.1). All this is done in the obscurity of a darkened room and compounded by incomprehensible medical jargon.

Undergraduate training in 'eyes' seems to leave the student with vivid memories of the dire consequences of mistakes, and too little knowledge or skill to feel confident in the management of many of the simpler conditions. This is a great pity, since eye problems are common, and present frequently in general practice and in other medical areas.

We stated in the introduction to the first edition of *The Eye in Clinical Practice* that the book is written for generalists who would like to gain confidence in practical ophthalmology. Recognizing that the specialty is often described in unfamiliar jargon and surrounded with an unnecessary mystique, we sought to bring some clarity to the subject. It was our hope that this would enable GPs and other general clinicians to give better explanations and treatments to their patients, and when necessary to make an informed referral. The writing of this second edition is based on the apparent success of that approach.

The current language of health care talks of 'journeys, pathways and interfaces' and, though it is jargon we ourselves seek to avoid, an important principle is relevant to this book as most patients still first seek medical help through their GP. It is estimated that eye problems account for 2–3% of GP consultations and without a basic level of skill, the doctor may either fail to treat effectively, or may place an undue burden on the local eye unit

by inappropriate referral. Neither works to the benefit of the patient or doctor. With an increasing emphasis on Specialists within Primary Care providing a point of referral for other GPs in their locality, it is important that all family doctors have sufficient understanding of the subject to know how this system might work for them. We have therefore retained a systematic approach to the diagnosis and treatment of eye conditions as they are likely to be encountered in general practice.

On the other hand it may be reassuring to know that a study of treatment and referral patterns (Sheldrick *et al.* *British Medical Journal* 1992; **304**: 1096) showed that most cases of misdiagnosis had no serious consequences for the patient. The most common confusion is between infective and allergic conjunctivitis, and the most common mistakes in diagnosis are in not recognizing blepharitis and dry eyes, which both have specific treatments.

Primary eye care in general practice

This usually means the GP, but under the chapters on screening and refractive problems the roles of health visitors, school nurses, child health clinics, orthoptists and optometrists (opticians) will be shown as part of a team. Nurse practitioners are also establishing their role in Primary Health Care Teams, with 'Walk-in' and 'Out of Hours' Centres.

In Chapter 2, we explain how to examine the patient with an eye problem, using only the time and the equipment which would normally be available in general practice. The subsequent chapters then consider the variety of symptoms which might be met, giving advice on their management. Practical procedures and surgery are explained, either for GPs to do themselves, or to help



Fig. 1.1 The ophthalmologist at work, using only spectacles. Japanese woodcut, circa 1740.

them and their patients understand what the ophthalmologist may do on referral to hospital.

Ophthalmology currently forms a significant component of all three parts of the membership examination for the Royal College of General Practitioners. In addition to specific questions on eye diseases, other questions concern the implications of systemic illnesses or treatments for the eye. The integration of eye problems with other diseases and with social factors is emphasized in this book, allowing ophthalmology to take its place in overall care provided for patients.

GPs might consider providing for their patients some of the booklets produced by agencies such as the RNIB (see Appendix 2). These include cataract, glaucoma, macular degeneration and diabetic eye disorders (Fig. 1.2). The leaflets can also have a role in encouraging screening and in advertising charity services. There are also HMSO leaflets about sight tests.

Secondary care by other eye professionals (Table 1.1)

Whilst usually meaning a hospital eye unit, this



Fig. 1.2 Royal National Institute for the Blind (RNIB) leaflets on a range of important subjects.

Table 1.1 Professionals involved in eye care

-
- GP
 - Hospital eye specialist
 - Casualty
 - Outpatient
 - Orthoptist
 - Optometrist (optician)
 - Community hospital
 - Child health clinic
 - School health service
 - Health visitor
-

could mean a 'high street' optometrist or community orthoptist. Under each subject, an attempt has been made to advise what should be referred for specialist help, to whom, and with what degree of urgency. Much will depend upon the local arrangements for eye care, and the skill, confidence and equipment of the referring doctor. GPs themselves may be a point of referral from optometrists or health visitors.

An eye casualty will provide immediate care for those patients who need 'same day' referral, whilst outpatients is the usual channel for most conditions. Even here, a good history and examination by the referring doctor will help the ophthalmologist assess the likely urgency of the problem, and whether other investigations, such as a refraction or visual field test will be needed before the patient is seen. Often the patient is frightened of blindness, and an informed

GP may be able to allay those fears while the patient waits for an appointment. Equally, fear of what the specialist might do is common: tales of eyeballs dangling on the cheek are believed by otherwise sensible people, and the GP may be someone they trust enough to discuss these fears. So, it is important that the doctor is accurately informed. This is what this book is hopefully all about.

Referral letter and GOS 2 form

In referring patients to hospital eye services it is important to include enough information for prioritization of cases. Include in the referral letter information about speed of onset of symptoms, which eye(s) are involved and a measure of visual acuity as well as any other eye findings. It is helpful to state a possible diagnosis. Also give information about past eye history, current health and medication both general and given for the eyes. If available, always include the optometrist's form (GOS 2), filling in the relevant section of additional information asked from the GP. Some optometrists are approved to refer patients with cataracts directly to the hospital outpatient clinic, which can work well provided the GP is also involved, with an understanding of how the cataract relates to the patient's medical and social background.

Training

We have assumed that the reader has had only an undergraduate training in ophthalmology which is to be reinforced, updated and expanded with the addition of a few simple practical procedures. We hope that this will encourage some readers to seek further training. Whilst postgraduate courses may help, it is really by experience and practice that confidence and skills are gained. This can best be done by linking with local ophthalmologists or the casualty or orthoptic departments, perhaps with the GP attending a session on a regular basis for a period of a few weeks at first. Time and payment are always scarce, but will be repaid if more of the provision of eye care can take place in the community as a result. This may also lead to a GP specialist role and could be facilitated by formation of Primary Care Trusts.

Basic equipment (Fig. 1.3)

Firstly, the doctor needs dilating drops, and a good ophthalmoscope. A suitable torch (in North American, a flashlight!), preferably with a cobalt blue filter as an option, will be needed to look at the eye surface, to display corneal abrasions and to test pupil reactions. Fluorescein stain is invaluable and so are topical anaesthetic drops for removing foreign bodies from the cornea. A Snellen chart, pin hole, reading type and Ishihara colour vision testing book form the basic extras for the examination. Some sort of vision test for young children (Stycar or Sheridan Gardiner) is needed, and a patch. All of these are readily available and relatively inexpensive (see Appendix 2).

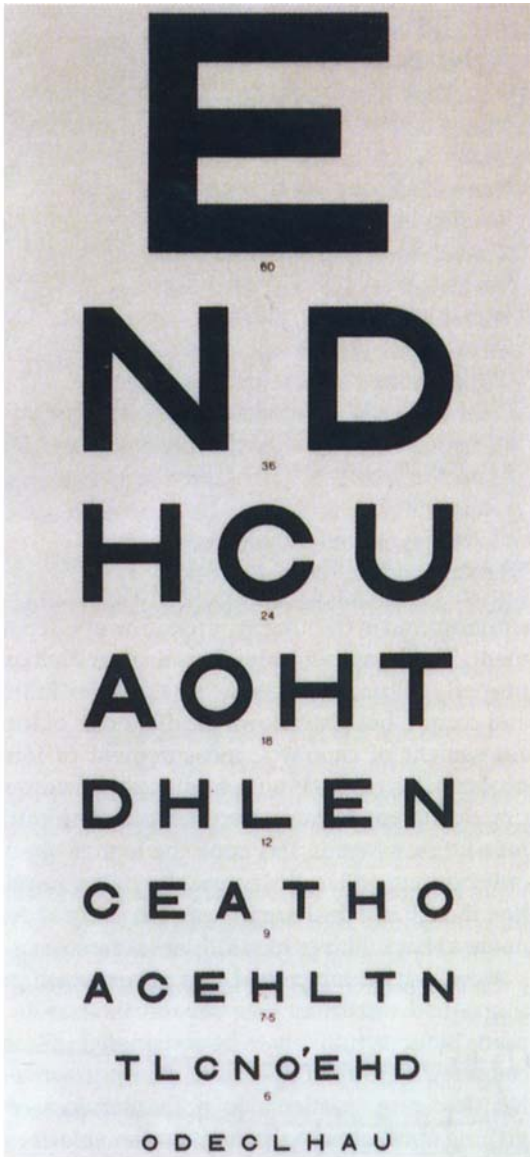
Slit-lamp

As the GP does more, so interest and skill will grow. At some stage it may be worth investing in a slit-lamp and in training in its use in an eye department. The lamp not only gives a magnified and properly illuminated view of the lids, linings and cornea, but also allows the diagnosis of iritis, assessment of cataracts, measurement of intra-ocular pressure and, with additional lenses and practice, gives a stable stereoscopic view of the retina. Elsewhere in this book the words 'should only be done under slit-lamp supervision' implies that the GP in a position to use a slit-lamp should not hold back if his or her skills are secure.

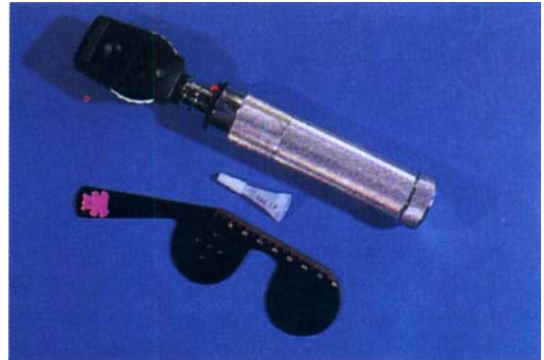
New, a good lamp (and it is never worth getting a bad one) may cost several thousands of pounds and is unlikely to be considered unless it can serve a group of doctors in a large practice or health centre, particularly if the services of a visiting ophthalmologist are also available. If care increasingly devolves to the Primary Care Group or Trust, this may be worthwhile. As the Health Service undergoes further changes it is a good time for GPs to re-evaluate their provision of eye care. We hope that this book will allow them to make informed decisions.

Some old wives' tales in ophthalmology

It is perhaps worth trying to dispel some misconceptions about eyes which are surprisingly common.



(a)



(b)

Fig. 1.3 Basic equipment to examine eyes includes: (a) a Snellen's chart for testing vision at 6 metres' distance; (b) a pin hole device, dilating drops and an ophthalmoscope.

- Normal eyes are not damaged by:
 - Reading in bright or poor light
 - Reading too close or too far away
 - Sunglasses
 - Wearing the wrong glasses
 - Not wearing glasses
 - Using one eye alone
 - 'Crossing eyes' — voluntarily converging them

Watching television (which only risks damaging the brain!)

Using a VDU.

- Normal eyes are not helped by:
 - Bathing with lotions
 - Exercises, even when focus for near is worse with age
 - Eating carrots.

- Headache is not caused by:
Glaucoma of the common chronic type
Reading with normal eyes.
- A cataract is not a film over the eye but opacification of the lens internally, so it cannot be 'peeled off'.
- The eyes are not removed from their socket for full examination, nor for eye surgery.
- Difficulty reading in later years is due to changes in the lens protein and not to weakness of the eye muscles.
- Contact lenses cannot get lost behind or inside the eye.

Chapter 2 **A practical approach to the eye and visual problems**

Eye problems have always seemed daunting to the non-specialist. The eye is small and is usually thought to be delicate, although it is actually surprisingly resilient. Some doctors are reluctant to admit that they feel squeamish about eyes. Special equipment is needed to get a really good view of the outside and the inside, and it needs experience and practice to master these. Testing visual acuity and visual fields seems unreliable and not often important.

Despite these problems all doctors need to be able to assess what they can and can't deal with and to feel confident of giving the right treatment initially. This chapter suggests that a doctor with a good ophthalmoscope, to examine both the surface and inside the eye, can tackle the eye and become more confident in knowing what is found. The difficulty in a busy clinical setting is to know what to look for and how to look without wasting time on irrelevancies. It should be possible to assess the eye patient adequately in the allotted time if the procedures are sensibly selected, clearly understood and occasionally practiced. The precautions needed with giving dilating drops are discussed, as in practice this adds a great deal in selected patients with little 'wasted' time.

Most patients will have a problem either with the eyes' appearance, how the eyes feel or how the eyes see. The chapters which follow outline these symptoms and discuss the commoner causes. This chapter deals with the practical approach to looking for the physical signs.

Equipment (Fig. 2.1)

Magnifying aids

A hand-held magnifying lens (loupe) may help give confidence in diagnosis, particularly with corneal lesions. It is obviously difficult to do any-

thing practical such as removing foreign bodies with a hand-held lens and magnifying spectacles may help. Wear reading spectacles if you normally would for close tasks.

Slit-lamp examination

The GP who has some training in ophthalmology will be familiar with the slit-lamp and with the benefits of looking at a stationary patient with bright illumination and magnification. One partner in a practice may opt to become skilled in its use and anyone with a training knows that a lamp is invaluable, allowing signs to be clearly seen, located and quantified (Fig. 2.2). Cells in the front or back chambers are visible. Ocular pressure can be accurately measured. The optic disc and retinal lesions can be examined in detail with an accessory lens.

Abnormal eye appearance

Look carefully with a bright light shone from both front and side. A good ophthalmoscope, using the largest spot and on the brightest setting, often has a better light than a pen-torch. Look for discharge, swelling or redness of the lids or conjunctivae, or of the eyeball itself. Look carefully at the cornea, particularly if the eye is painful.

To examine the eyeball, pull down the lower eyelid with the patient looking up and pull up the upper lid with the patient looking down (Fig. 2.3). Ask the patient to look to either side as well. Decide if all the conjunctiva is inflamed or just part of it. If the eye is red but painless, suspect conjunctivitis (which is usually sticky) or episcleritis (which is often sectorial). If itching is prominent suspect an allergic reaction, especially if there is also swelling of the conjunctiva. Examine both eyes to compare them and decide if the problem affects one or both eyes.

If redness is mostly around the limbus or in a particular sector of the eyeball, look carefully at the cornea for a scratch, foreign body or ulcer. Red eye with pain rather than discomfort also suggests a more serious problem either of the cornea (when tearing is common) or of iritis (when photophobia is characteristic). Corneal abrasions can occur without a clear history of injury, especially in children. Beware also of the patient who has acquired a rust foreign body whilst working under the car, or the welder with 'arc eye' and of the contact lens wearer.

Anaesthetic drops to examine a painful eye

If the eye is very painful it may be necessary to give local anaesthetic drops, perhaps 'minims' of benoxinate, to examine. Be particularly wary of painful red eyes in contact lens wearers, especially soft lenses. Anaesthetic drops should be used with caution if a contact lens is in place, and soft lenses will be temporarily stained by fluorescein (which can be bleached out with dilute hydrogen perox-

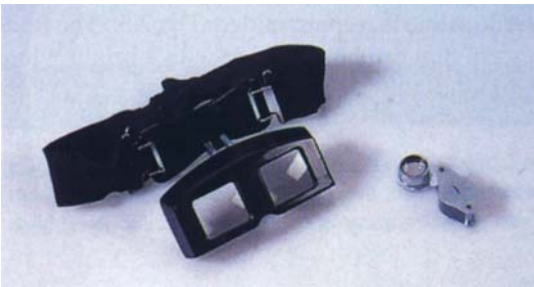
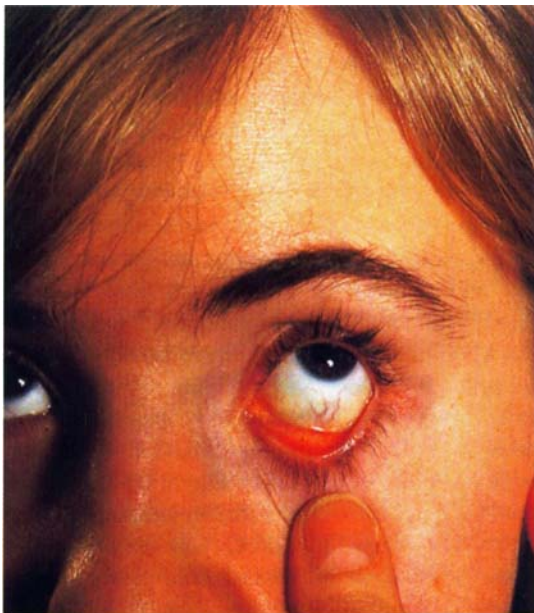


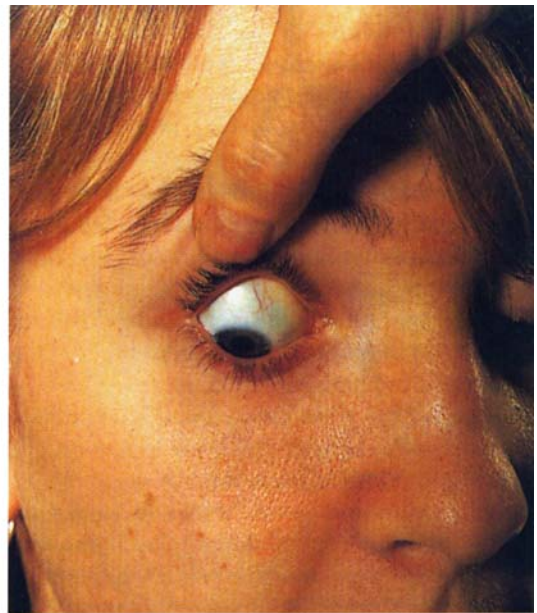
Fig. 2.1 Magnifying aids, e.g. a hand-held single loupe or a binocular magnifier with headband.



Fig. 2.2 The slit-lamp in use. This gives stable magnification of the eye surface and interior.



(a)



(b)

Fig. 2.3 Examine all the eye surface by pulling the lower lid down and the upper lid up while the patient looks in the opposite direction.

ide). The lens should not be worn again until the pain and redness have subsided. If a child is reluctant to open the eyes for drops, try lying the child down and put a drop at the inner canthus. Prevent the child from wiping the drop away and as soon as the child opens the eye to see what is going on, the drop will run in without problem (though the child may feel a bit cheated) (Fig. 2.4).

Basic equipment needed:

- Snellen's chart
- pin hole device
- ophthalmoscope
- torch and Anglepoise light
- dilating drops
- local anaesthetic drops
- fluorescein strips
- a good book on eyes

A GP should be able to:

- measure vision and use a pin hole
- assess afferent pupil responses
- evert the upper eyelid
- use fluorescein
- use drops to dilate the pupil
- use the ophthalmoscope

To examine the eye surface:

- a bright light is essential
- a magnifying aid is useful

To give eye drops or ointment to a child try with them lying flat with the eye closed and put at the inner corner

Fluorescein staining the cornea: to indicate loss of surface cells

If there is a possible corneal problem (particularly with pain, tearing or photophobia) stain with fluorescein. This comes as drops in 'minims' form, but a more convenient amount is dispensed from a moistened filter paper strip impregnated with fluorescein. This can be wetted with tears or tapwater, neither of which is sterile, though sterile saline is recommended (Fig. 2.5). The fluorescein film can be looked at with a bright white light, although a bright blue light is best. Some-

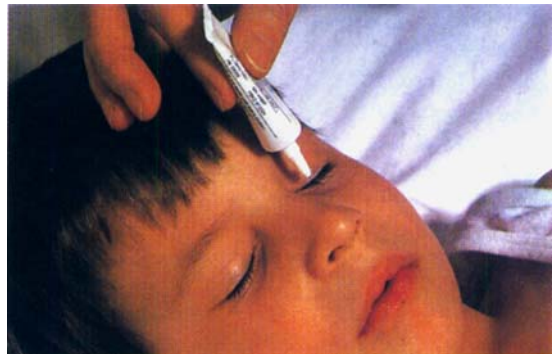
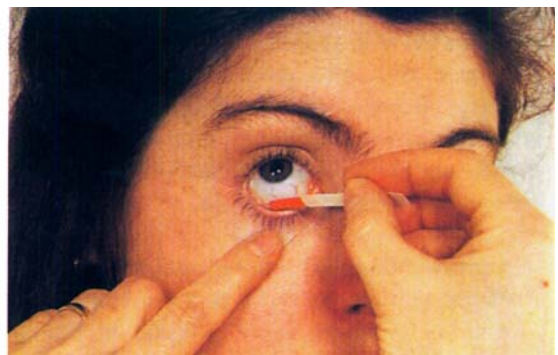


Fig. 2.4 Giving ointment to the inner corner of a closed eye in a child reluctant to open his or her eyes, with the child lying down (drops can be given in a similar way).



(a)



(b)

Fig. 2.5 (a) Fluorets (Smith and Nephew Pharmaceuticals, Romford, UK) are paper strips impregnated with fluorescein for staining the cornea. (b) The strip is wetted and touched to the inside of the eyelid.

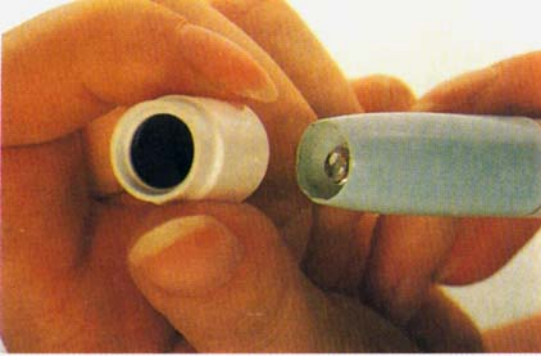


Fig. 2.6 A pen-torch may be fitted with a cobalt blue filter for use with fluorescein stain.

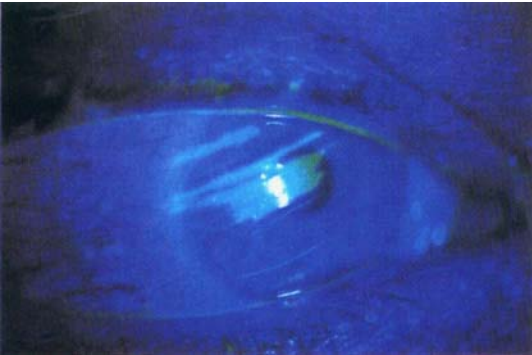


Fig. 2.7 A corneal abrasion with the area of lost epithelium stained green with fluorescein and blue light. (Courtesy of Mr A. Shun-Shin.)

times pharmaceutical companies provide cobalt blue filters to attach to a pocket-torch (Fig. 2.6), and some ophthalmoscope manufacturers will fit a blue filter in the 'scope', but these are rarely standard. If the cornea is scratched or ulcerated, fluorescein stains the lesion which shows bright yellow in white light or lime green in blue light (Fig. 2.7).

Upper eyelid eversion: an essential simple skill

If the eye is acutely red and uncomfortable with a foreign body feeling and a corneal foreign body is not seen, examine the everted upper lid for a subtarsal foreign body. Upper lid eversion can be managed in most patients with a bit of practice, though it is best to rehearse this at leisure on a will-

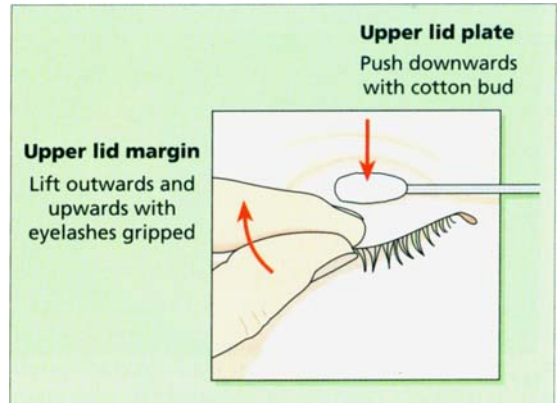


Fig. 2.8 Eversion of the upper eyelid.

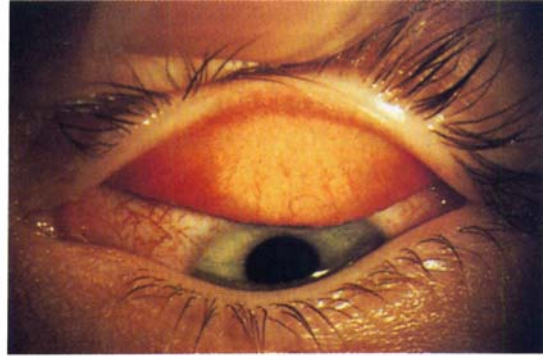
ing colleague before tackling patients. It is a useful trick also in contact lens wearers if they 'lose' the lens under the upper lid. Ask the patient to look down. Grip the lashes of the upper lid, and pull downwards and away from the eye surface. With surface tension broken, the plate of cartilage within the lid flips over if pushed down with a cotton bud (or extended paper clip) as the lashes are lifted up (Figs 2.8 and 2.9b). Tell the patient that it feels uncomfortable but is not painful, and is a harmless procedure. The foreign body or lens is usually obvious with a good light, the former stuck to the lid and the latter often stuck to the eyeball. The patient will be very grateful when the foreign body has been wiped off with the cotton bud. The lid will flip itself back particularly if the lashes are pulled forwards again. It is rarely necessary to give local anaesthetic drops to achieve this unless the eye is very painful. It may be difficult to evert a swollen lid. The lower lid can be everted as shown in Fig. 2.9a. It is surprising how often patients believe that it may be necessary to remove the eyeball from its socket to examine properly, so reassure the occasional patient about this if they seem reluctant to let you touch them.

The red painful eye

If the eye is red and painful but no corneal or subtarsal problem is found, consider iritis or, less likely, acute glaucoma. Haziness of the cornea or anterior chamber is always significant (Fig. 2.10), and should be referred up to eye casualty.



(a)



(b)

Fig. 2.9 Learn to evert the lower lid by pressing it up and over your fingers (a). The upper lid is everted as shown in (b).



Fig. 2.10 Corneal haze visible as an opacity using torch light—this was an indolent ulcer in a contact lens wearer.

Reduced vision or photophobia are common in the more serious ‘front of eye’ problems. In acute glaucoma with an overinflated eye the eyeball feels like a cricket ball to touch through closed lids, rather than the usual squash ball feel to finger pressure.

If there is a history of eye injury it is important to get a clear story and to examine the eye itself carefully as well as checking the vision (medicolegal implications perhaps). In this setting, irregularity, dilatation or sluggish response of the pupil is particularly important as it may signify a penetrating injury or iris trauma. Always ask specifically about hammer and chisel use (see Chapter 10) otherwise there may be a medicolegal sequel if there is a tiny high-velocity iron foreign body within the eye. Subconjunctival haemorrhage is quite common with relatively minor trauma, but

warrants an assessment of vision and a good look at the cornea and iris. Spontaneous subconjunctival haemorrhage, on the other hand, warrants measurement of blood pressure, enquiry to exclude a bleeding disorder (very rare cause) and reassurance. Bleeding within the eye will produce hazy media—hazy cornea from blood in the front chamber and hazy retinal view in the back chamber.

Most cases with sticky discharge are simple conjunctivitis, but beware if the problem is painful (there might be an underlying corneal problem or foreign body) or particularly itchy (the cause might be an allergy). Be careful also in contact lens wearers and in the very young or very old in whom the organism might be atypical. The sticky eye in neonates is discussed elsewhere. Recurrent stickiness with watering is likely to be due to poor tear drainage. Consider if there is also chronic blepharitis with redness and scaling of the lids.

Swelling may affect the lids or conjunctiva, or both, and may arise from an underlying surface problem such as a foreign body, so have a good look at the eye surface. It may be difficult to prize the lids apart, particularly if they are painful or slippery with tears or ointment, so use a gauze pad (Fig. 2.11). If there is swelling or asymmetry around the eyes, an important extra sign, often missed but not necessarily difficult to detect, is proptosis. This implies that the eye is pushed forwards by something behind in the orbit. It may be seen best if the patient puts chin to chest and the doctor sights down the brows and nose. Another

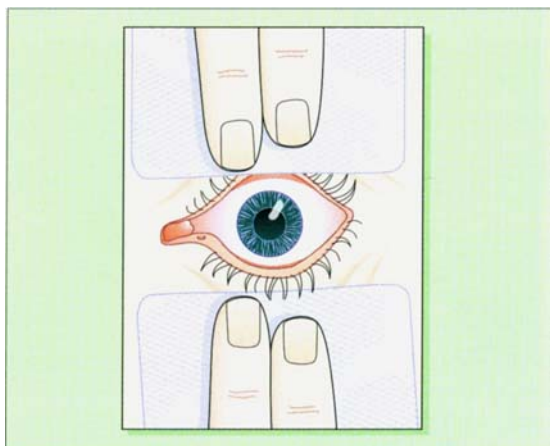


Fig. 2.11 Examination of an eye with swollen lids. The eyelids are separated with two gauze swabs and gentle pressure.

cause of swelling is an enlarged lacrimal gland. This can be felt through the upper lid at the outer corner, and is often just visible if the upper lid is pulled up in this area with the patient looking down and in towards the nose (see Fig. 5.54).

Schirmer testing for dryness (Fig. 2.12)

If there are symptoms suggesting dryness it may be helpful to test tear production. This is done within a few minutes using small standardized Schirmer filter paper strips. These are folded and placed (without using anaesthetic drops) hooking over the outer part of the lower eyelids for a timed



(a)

5-minute period. The patient may be most comfortable if the eyes are closed. Reassure them that the strips feel uncomfortable but are harmless. Wetting down the strip length is measured in millimetres from the fold. Anything less than 10 mm is suggestive of dryness; under 5 mm is diagnostic.

Cover test for the squinting eye (Fig. 2.13)

Childhood squint is discussed in Chapters 7 and 9. It is worth being able to do a simple cover test to detect squint. This is best learned by visiting an orthoptic department to see and practice under supervision. If there is double vision, look at the range of horizontal and vertical following eye movements and get the patient to decide where the doubleness is most pronounced as this will help to define the likely cause. See Double vision (p. 39).

Problems with seeing clearly

If there is nothing to suggest a problem with the eye surface (redness or stickiness) in the patient with blurred vision, then there may be a problem with the internal eye or with the optic nerve.

Testing visual acuity: preferably standardized

It may not be necessary to measure vision accurately in all patients, but visual acuity is one important 'gold standard' in function (visual field is the other) and to assess how badly the vision is



(b)

Fig. 2.12 (a) Schirmer's test strips for dry eyes. (b) Strips positioned over the lower eyelid. The strip in the left eye is already half wetted.