

# Removing a foreign body from the eye

TREVOR J.P. HODSON MB BS, FRANZCO

The majority of ocular foreign bodies are located superficially. With correct technique, most of these can be removed safely in the office setting.

## Presentations

Foreign bodies in the eye are a relatively common clinical problem. A wide variety of material is encountered: small metal fragments, sand particles, pieces of glass, seed husks, and so on.

Ocular foreign bodies occur in a variety of situations, but are most often seen in young men in industrial workplaces. The majority of objects are located superficially, but it is important to carefully ascertain details of the incident – if there is a history of metal on metal contact, such as striking a metal chisel with a hammer, then the possibility of an intraocular object should be considered (Figure 1). The typical appearance of a corneal rust ring seen after the partial removal of a metallic foreign body is shown in Figure 2.

## Anaesthesia

Prior to examining the patient with a suspected ocular foreign body, it is appropriate to instil local anaesthetic drops (amethocaine 1% [Minims]) into the affected eye to relieve photophobia and blepharospasm. Magnification will be necessary, and patients are usually asked to lie on a couch if binocular loupes are used whereas they are seated for a slit lamp examination.

A foreign body at the limbus (Figure 3) requires special attention to the anaesthetic technique because the standard drop technique often fails to give adequate analgesia. It is a good idea to soak a pledget of cotton wool in a local anaesthetic agent such as 2 or 4% xylocaine and, after the initial instillation of drops described above, place the soaked pledget on the conjunctiva adjacent to the limbal foreign body. Leave it in place for several minutes to ensure adequate anaesthesia.

An alternative anaesthetic technique for a limbal foreign body may be to infiltrate the conjunctiva adjacent to the object with 0.5 mL of 1 or 2% plain lignocaine using a 26- or 28-gauge needle. After instilling the topical drops suggested above, ask the patient to look to the side away from the location of the foreign body (e.g. if the foreign body is at the nasal limbus, ask the patient to look outwards). Place the needle, bevel up and tangential to the eyeball, into the conjunctiva and inject slowly, raising a bleb in the conjunctiva. Wait a few minutes before proceeding.

## Assessment

It is important to take a history that covers the presenting complaint as well as a brief history of any past ocular problems. The visual acuity should be measured for each eye, using corrective lenses or a pinhole if necessary, and recorded. In most instances, the patient is aware of a foreign body sensation and has a degree of associated photophobia and a possible reduction in acuity. There may be a clear



Figure 1. An intraocular foreign body in the vitreous cavity of the right eye.

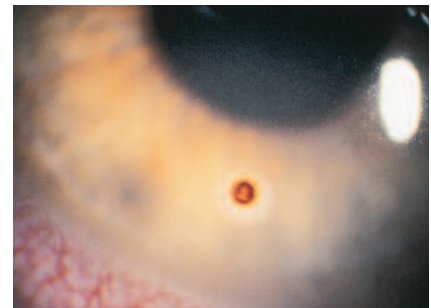


Figure 2. A rust ring in the inferior cornea of the left eye.

history of an incident causing the problem, but this is not always so.

Most of the superficial foreign bodies encountered in clinical practice will be located on the cornea, and the remainder in the conjunctival recesses. Fluorescein may be helpful in identifying a subtarsal foreign body because the object will produce a linear pattern of staining in the corneal epithelium. Eversion of the eyelid will normally allow a foreign body in this location to be confirmed and removed (Figure 4). The upper eyelid is easily everted if the patient is first asked to look down. Then, use one hand to gently pull the eyelashes down and slightly away from the globe while using the other hand to evert the lid with a finger or cottonbud placed at the superior border of the tarsal plate. If the patient continues to look down then the lid should remain everted and the patient comfortable.

Plain x-rays will usually be sufficient

Dr Hodson is Consultant Ophthalmologist, The Mount Gambier Eye Centre, Mount Gambier, SA.

### Superficial ocular foreign bodies and removal procedures

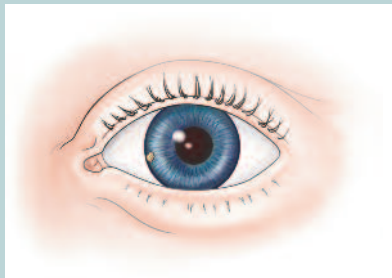


Figure 3. A foreign body shown in the limbus, the transitional zone between sclera and cornea.

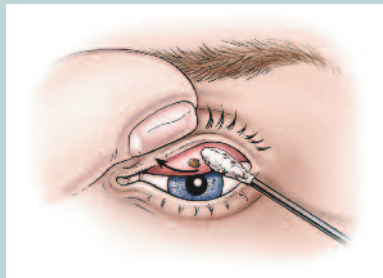


Figure 4. Using a cottonbud with an everted upper eyelid to remove a subtarsal foreign body.

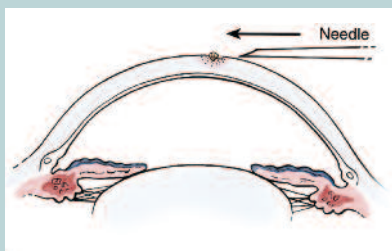


Figure 5a. The needle should be positioned tangentially to the globe.

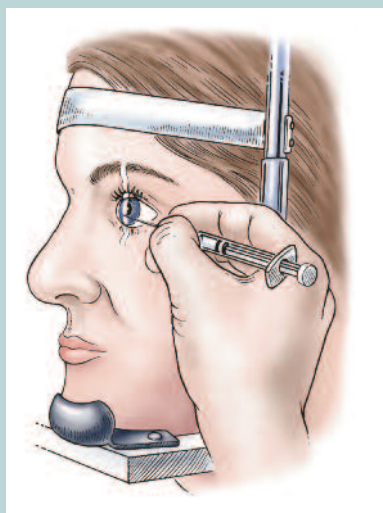


Figure 5b (right). Using a needle mounted on a syringe to remove a corneal foreign body at the slit lamp. The hand is steadied by resting against the frame.

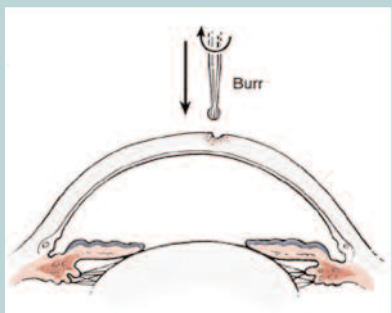


Figure 6a. A burr should approach at an angle of 90° to reduce the risk of slipping.

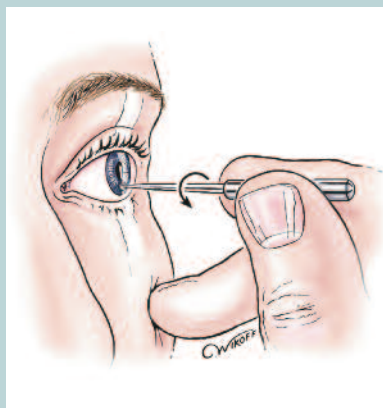


Figure 6b. Using a handheld burr to remove residue from a corneal foreign body.

to exclude the possibility of an intraocular foreign body. This should be considered when there is a clear history of an object striking the eye but no corneal conjunctival foreign body is found on examination.

### Corneal foreign body removal

A corneal foreign body needs to be removed as soon as practicable, and this can generally be achieved in the office setting. First, position the patient appropriately. An assistant may be helpful in controlling the patient's head movement and in the event that the patient faints due to a vasovagal episode.

A foreign body that has been present for several days can usually be removed simply with a 23-gauge needle. It is often easier to manipulate the needle if it is mounted on a syringe rather than by trying to hold the plastic hub. The eye should be positioned so that the foreign body is at the apex of the cornea – for example, if the object is placed nasally then the patient should be looking temporally. This reduces the risk of the needle perforating the globe if the patient moves the eye.

Place the needle tangentially to the globe with the bevel facing upwards (Figures 5a and b). Then, use a levering action to remove the foreign body from the cornea. If removal is incomplete (for example, if a rust ring has formed) then the residual material can be debrided using the edge of the needle tip or a burr. I find the Algerbrush the easiest to operate. This is a battery operated device with replaceable burrs available in two sizes (0.5 and 1.0 mm). The burrs can be prepacked in sterile packaging and are usually disposed of after a single use because of difficulties in ensuring adequate cleaning and sterilisation.

It is important that a burr approaches the cornea perpendicularly to the surface – this reduces the risk of it slipping and abrading the surface (Figures 6a and b). The spinning burr is then applied to the

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residual matter using gentle pressure. Its depth can be monitored using the slit lamp, and caution should be taken not to exceed one-third of the corneal thickness.

Foreign bodies overlying the pupil need special care because they may be associated with corneal scarring that may affect visual acuity. If referral to an ophthalmologist is convenient then this should perhaps be arranged in this circumstance.

### Aftercare

When the foreign material has been removed, the usual aftercare consists of an application of chloramphenicol 0.5% ointment (Chlorsig, Minims). In addition, if there is a significant inflammatory response in the anterior chamber then a cycloplegic agent may be used (either homatropine 2% [Isopto, Minims] or atropine 1% [Atropt, Minims]) – a slit lamp assessment will be required. A eye-pad is optional but should not be used if the patient is going to drive. The antibiotic ointment should be continued for three to five days, two or three times daily, and a review visit is normally appropriate in three days if any problems arise. In most cases there is some discomfort for about a day, and patients need to be reminded that simple analgesics may be required when the anaesthetic drops wear off (usually after an hour or two).

### Prevention

It should be remembered that many ocular foreign body injuries can be avoided by wearing appropriate eye protection. Safety glasses with polycarbonate lenses offer the best protection, especially if they include side shields. Such glasses are freely available and inexpensive – particularly when the cost of a penetrating injury or even the cost of time lost from work from a superficial foreign body injury is considered. MT

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DECLARATION OF INTEREST: None.