Foreign Body in Eye

Disclaimer

COVID-19 note

The Royal Australian and New Zealand College of Ophthalmologists (RANZCO) and The Royal Australian College of General Practitioners (RACGP) have made recommendations regarding eye examination during the COVID-19 pandemic. See RANZCO – COVID-19: Practical Guidance for General Practitioners Performing Eye Examinations.

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Red Flags

- Suspected [penetrating injury]

Background – About Foreign Body in Eye

- One of the most common ocular complaints.
- Mostly a small particle adherent to the corneal epithelium. May also lodge on the tarsal conjunctiva, underneath the top eye lid.
- Can be mimicked by:
  - conjunctivitis
  - marginal or herpetic corneal ulcers
  - early iritis.

Assessment

1. Take a careful history.

   **Careful history**
   - If significantly decreased vision or high-impact mechanism (e.g., hammering metal on metal), assume a [penetrating eye injury] until proven otherwise.
   - As presentation is often delayed, ask about the days leading up to the onset of symptoms.
   - Consider causes:
     - Corneal and tarsal foreign bodies hurt when patient blinks
     - Penetrating foreign bodies entering at high speed are often painless apart from the moment of impact
     - Floaters suggest vitreous haemorrhage secondary to ocular penetration

   **Special considerations**
   - Foreign bodies embedded for longer than 12 hours may have encroaching corneal epithelium and a rust ring
   - Organic material from gardening carries a high risk of infection.
   - Infrequent foreign bodies such as seeds and insect scales may lead to vision threatening consequences.
   - Contact lens use may be associated with higher risk of infection with unusual organisms.

2. Examine the patient. If there is a possibility of a penetrating eye injury, do not touch the eye or attempt to remove foreign material, and do not evert the lid.

3. Check visual acuity. If vision is watery or patient is in pain, instil topical anaesthetic drops and retry.
**Topical anaesthetic**
Consider instilling local anaesthetic into both eyes as this reduces blepharospasm:
- Topical tetracaine 1% takes approximately 15 seconds to work and lasts 15 minutes.
- Topical oxybuprocaine 0.4% takes approximately 20 seconds to work and lasts for 20 minutes.

**Visual acuity**
Measuring visual acuity:
1. Ask if the patient has distance glasses with them, and if either eye has had known poor vision, i.e., a lazy eye.
2. Test their distance vision in each eye, while wearing glasses, using a 3 or 4 metre chart.
3. Check each eye separately, with distance glasses if worn. If acuity is subnormal, check with a pinhole.
4. If vision improves with a pinhole and no cataract is present, then the patient requires a review of their glasses.
5. Near vision – test while patient is wearing reading glasses.
6. Corneal ulcers usually reduce vision, while abrasions usually leave vision intact.

4. Assess for haemorrhage – subconjunctival haemorrhage can hide a penetrating injury.

5. Assess for foreign body:
   - Check red reflex – foreign bodies appear as a dark defect.
   - Look for ≥ 1 foreign bodies.
   - Check conjunctiva, cornea, anterior chamber, and pupils with an ophthalmoscope dialled to +10D held at 10 cm. Look for ≥ 1 foreign bodies which appear as a dark defect.
   - Look for an abnormal iris, e.g., tear-drop shaped or with an unusual red reflex, may point to a penetrating eye injury.
   - If no possibility of penetrating eye injury, evert upper and lower eye lids [YouTube video, 52s].

6. Instil **fluorescein** and check for:

   **Fluorescein**
   Available as a pre-prepared dilute mixture or as dry strips that release fluorescein in contact with tear film.
   - previously unseen foreign body, abrasion, or ulcer.
   - **signs of penetrating eye injury**
     - Subconjunctival haemorrhage, which can hide a penetrating eye injury
     - Full thickness scleral or corneal laceration
     - Abnormal iris e.g., tear-drop shaped
     - Unusual red reflex
     - If no clear symptoms or signs, but history is suspicious, consider:

   **Seidel test**
   - Apply 2% fluorescein drops directly over the potential site of perforation while observing the site under the blue light of the slit lamp.
   - If a perforation and leak exist, the fluorescein is diluted by the aqueous to appear as a dilute green stream within the dark orange dye.
See Root Atlas – Positive Seidel test [video, 53 seconds]

- X-ray of orbits, especially if metallic foreign body is suspected.

"Peaked pupil" seen in penetrating eye injury.

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- foreign body underneath upper lid

Foreign body underneath upper lid.

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Upper lid should be everted in all suspected foreign bodies.
Management

Practice Point

Be aware of possible corneal scarring

If the foreign body is central or appears to be deep there is a risk of causing corneal scarring when attempting to remove it. In the event that it cannot be removed easily, refer to a facility that has access to a slit lamp

1. Do not attempt removal of penetrating foreign body. Request **immediate ophthalmology assessment** and manage further according to **Trauma in Eyes**.

2. If central or deep foreign body, due to risk of scarring and vision, consider requesting prompt **optometry advice** or prompt ophthalmology advice.

3. Remove the foreign body:
   - Lay the patient in a supine position, with the affected eye nearest to you. Ask them to focus on the ceiling.
   - Instil topical anaesthetic.
   - Approach the patient’s eye from the side to reduce blink reflex.
   - Use magnification and light from loupes or an ophthalmoscope.
   - Remove the foreign body with a sterile, saline-soaked cotton bud using a sweeping motion.
   - If cotton bud fails:
     - consider an 18 gauge or 20 gauge needle to **carefully loosen the foreign body**. Only attempt with a cooperative adult and only if you are confident.

   **Carefully loosen the foreign body**
   - Construct a spatula with 18 gauge or 20 gauge needle.
     - *Two bends are required* – spatulate the bevelled area, then bend the shaft to 30° about halfway from the needle to the hub.
     - *This allows object to be lifted using a scooping fashion. The bend ensures the needle is held parallel to the cornea.*
   - Use the side of the needle, **not** the tip.
   - consider a dental burr or motorised dental burr if available.

   - Irrigate the eye with saline to remove any residual foreign material.
   - If the foreign body cannot be removed, seek prompt **optometry advice** or ophthalmology advice.
   - If the foreign body is associated with significant punching trauma to the eye, seek ophthalmology advice or **optometry assessment** for examination of the ocular fundus through dilated pupils (optometrist or ophthalmologist) to rule out retinal trauma.

4. If incomplete foreign body removal or persisting foreign body symptoms seek ophthalmology advice.
5. After removing the foreign body, apply topical chloramphenicol 1% eye ointment along the inside of the lower eyelid and ask the patient to blink several times.

6. Manage rust rings:
   ➢ Use chloramphenicol 1% eye ointment or drops four times a day for 24 hours after the initial metal object has been removed, as it makes removal easier.
   ➢ If ring is in centre of cornea, seek optometry advice or ophthalmology advice for removal.
   ➢ If ring is peripheral, consider removing in general practice or seek optometry advice or ophthalmology advice.
     • Use a spatulated needle (as for loosening foreign body) or the flat edge of a 15 blade tip. Using a needle-point to remove the ring tends to separate the corneal layers from each other.
     • A sterile Algerbrush burr, or similar, provides a better result.
     • Be aware of risk of producing a penetrating injury.

7. Manage **uncomplicated corneal abrasions** if present.

   **Uncomplicated corneal abrasions**
   Minor symptoms may continue for up to 2 weeks.
   • Prescribe topical chloramphenicol 1% eye ointment four times a day for 5 to 7 days.
   • Give analgesia – oral paracetamol and NSAIDs are very effective.
   • Never issue or prescribe topical anaesthetic agents, as they mask symptoms, potentially lead to more trauma, and delay healing.
   • If persisting epithelial defects or recurrent erosions seek optometry advice for consideration of bandage contact lenses or ophthalmology advice.
   • Advise the patient not to wear contact lenses until the abrasion has healed.
   • Educate the patient on the importance of wearing eye protection while performing risky activities.

8. If the abrasion has occurred with contact lens use, seek optometry advice due to the risk of unusual or severe infection e.g., pseudomonas.

9. Consider eye patching:
   ➢ Studies have shown there is no difference in healing time with or without patching, but be aware there may be an increased infection rate if prophylactic topical antibiotics are not used. Eye patching may give pain relief.
   ➢ Consider **padding the eye** to protect abrasions that cover greater than 10 mm or 25% of the cornea.

**Padding the eye**
1. Use a double pad technique as the lid must be held down firmly.
2. Ask the patient to keep both eyes gently closed until finished.
3. Fold the first pad in half and secure the second over the top. Ensure the medial and lateral parts of the pad are pushed down firmly onto the eyelid.
4. Use two strips of 2 cm wide paper tape long enough to reach from the middle of the forehead towards the ear.
• Instruct the patient not to drive while wearing eye pad.
• Instruct the patient to lift the pad and apply chloramphenicol 1% eye ointment four times a day.
• Remove after 24 hours.

➢ An alternative management is to seek [optometry advice](#) or ophthalmology advice for fitting of a bandage contact lens.

10. Follow-up:
➢ Review the patient after 24 hours:
• Ensure that pain and photophobia is subsiding.
• Check visual acuity.

**Visual acuity**

Measuring visual acuity:

1. Ask if the patient has distance glasses with them, and if either eye has had known poor vision i.e., a lazy eye.
2. Test their distance vision in each eye, while wearing glasses, using a 3 or 4 metre chart.
3. Check each eye separately, with distance glasses if worn. If acuity is subnormal, check with a pinhole.
4. If vision improves with a pinhole and no cataract is present, then the patient requires a review of their glasses.
5. Near vision – test while patient is wearing reading glasses.
6. Corneal ulcers usually reduce vision, while abrasions usually leave vision intact.
7. If any concerns, request [optometry assessment](#).

• Check corneal defect with fluorescein staining

➢ Continue to use chloramphenicol 1% eye ointment four times a day for a further 5 days.
➢ Advise the patient to return if increasing pain, photophobia, or visual impairment. Follow the keratitis pathway.
➢ If persistent epithelial defects or recurrent erosions, seek ophthalmology advice or [optometry assessment](#).

**Referral**

• If penetrating foreign body request immediate ophthalmology assessment.
• Request ophthalmology advice or [optometry advice](#) if:
  o central or deeply embedded foreign body.
  o foreign body cannot be removed.
  o persisting foreign body symptoms.
  o incomplete foreign body removal.
  o central rust ring
  o persisting peripheral rust ring unable to be removed.
  o persistent epithelial defects or recurrent erosions.

• If significant punching trauma to eye, request ophthalmology advice.
• If corneal abrasion with contact lens use, seek [optometry advice](#).
Information

For health professionals

Further information

- Australian Family Physician – Managing Corneal Foreign Bodies in Office-Based General Practice
- GP Eyes – Something in the Eye: Non Penetrating Eye Injuries [subscription required]

For patients


Disclaimer

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