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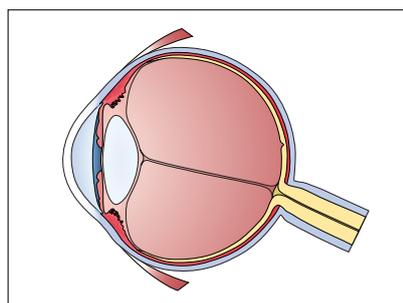
Eye Injuries

Structure of the cornea

The cornea is made up of five layers. Starting from the outside of the cornea and moving inwards, the layers of the cornea consist of the:

- **Epithelium** – a protective outer membrane that keeps the eye moist
- **Bowman's membrane** – a thin layer of transparent tissue underneath the epithelium
- **Stroma** – a layer of connective tissue that supports the cornea
- **Descemet's membrane** – a flexible, liquid-like layer that covers the inner surface of the cornea
- **Endothelium** – a single layer of thin, flat cells that form the inner surface of the cornea

The structure of the face helps to protect the eyes from injury. Each eyeball is set into a protective socket of bone known as an orbit, and the eyelids can close very quickly to form a protective barrier.



Types of eye injuries

There are many types of eye injury. Some common eye injuries include:

- corneal abrasions – damage to the cornea (the protective layer of transparent tissue at the front of the eye) caused by scratching or grazing
- iritis (uveitis) – inflammation (swelling) of the iris (the coloured part of the eye that controls the amount of light that enters); it can be caused by a trauma to the eye (traumatic iritis), or by another condition (non-traumatic iritis)
- foreign bodies – material that accidentally gets into the eye, such as metal, wood, plastic or dust

How common are eye injuries?

Eye injuries are uncommon. For example, each year in the UK, scratches or grazes to the cornea (corneal abrasions) affect about 3 in 1,000 people.

Corneal abrasions are usually caused by a foreign object getting into the eye, such as grit, or by a contact lens.

Superficial eye injuries

An eye injury is classified as superficial (affecting only the surface) if it does not penetrate beyond the Bowman's membrane. Depending on the size of the abrasion, a superficial eye injury will usually take between 24 to 72 hours to heal.

Eye injuries can be treated with eye drops to prevent infection, and oral analgesics (painkillers) to reduce pain

Symptoms of eye injuries

Superficial eye injuries are minor eye injuries, but because the area around the eye bruises particularly easily, they can sometimes look worse than they actually are.

Corneal abrasions

- Symptoms of a corneal abrasion include:
eye pain and sensitivity to light (photophobia)
- increase in tears produced by the eye
- blurred or distorted vision
- squinting caused by spasm (involuntary contraction) of the muscle surrounding the eye
- feeling that something is in your eye and it cannot be removed

Iritis (uveitis)

Symptoms of iritis include:

- eye pain and sensitivity to light (photophobia)
- deep ache in your eye, or in the brow region
- small or irregular-shaped pupil
- blurred vision
- red, inflamed eye
- increase in tears produced by the eye
- headache

Foreign bodies

Symptoms of foreign bodies may include:

- sensation that something is in the eye
- increase in tears produced by the eye
- eye pain
- blurred or double vision

- sensitivity to light (photophobia)
- a visible foreign body on the cornea
- a rust ring or stain on the cornea if the foreign body is metal

Other possible symptoms

Other symptoms of an eye injury can also include:

- pain when you move your eye
- burning sensation
- swollen eyelids
- a red spot of blood on the sclera (the tough white coating of the eyeball)
- swelling and bruising around the eye

When to seek medical advice

Seek urgent medical advice if you have any of the following symptoms:

- persistent eye pain
- continuous bleeding from your eye
- foreign bodies that cannot be removed
- blurred and decreased vision
- flashing lights, spots or shapes made up of shadows in your field of vision
- redness in the eye, particularly around your iris (the coloured part of the eye that controls the amount of light that enters)

- pain when exposed to bright light (photophobia)
- a laceration (cut) to your eyeball or eyelid

Always seek medical attention if you sustain an eye injury as a result of an object hitting your eye at high speed.

Causes of eye injuries

There are many causes of eye injury, including:

a blow to the eye

- foreign bodies – any material that gets into your eye, the seriousness of the injury will depend on what the object is and whether it has pierced your eye
- cuts to the eyelid and eyeball
- chemical exposure
- ultraviolet light
- Blows to the eye
- A blow to the eye can cause a number of injuries.

Traumatic iritis (uveitis) – inflammation (swelling) caused by a blow to the eye

Orbital blowout fracture – breaks or cracks in the bones of the face that surround the eye, which can push the eyeball further back into the eye socket (orbit).

Bleeding in the eye (hyphema).

Retinal detachment – a rare condition that result from tears and breaks in the retina, and can lead to permanent vision loss if not treated.

Ultraviolet light

Ultraviolet (UV) light from the sun or from exposure to sun lamps can lead to an eye injury called ultraviolet keratitis or corneal flash burn.

Contact lenses

Wearing contact lenses incorrectly can also cause injury to your eyes.

Corneal abrasions (scratching or grazing of the cornea) are likely to occur if your contact lenses are not clean, do not fit properly or are worn for long periods of time.

It is also possible for a foreign body, such as a tiny particle of dust or dirt, to become trapped behind your contact lens and cause irritation to your eye.

Treating an eye injury



Self-help

If you have something stuck in your eye (a foreign body), or if your eye has been exposed to chemicals, you should wash your eye out using clean water, or a sterile fluid from a clear container. This will remove any loose material in your eye.

Flushing your eye

If chemicals are involved in the eye injury, flush your eye thoroughly

using clean water or sterile fluid for at least 10 to 20 minutes. Use a lot of water to wash your eye, and gently hold your eyelids open throughout the rinsing process.

To flush your eye, you should:

stand over a sink, cup your hands and put your face into the running water

hold a glass of water to your eye and tilt your head backwards (do this repeatedly)

if you are near a shower, wash your eye out under the running water (this is particularly useful if your eye has been exposed to chemicals)

if you are working outside, you can use a garden hose to rinse your eye, but make sure that it is not on a powerful flow setting

Do not remove anything that is embedded in your eye.

Cover the injured eye with a clean pad and go straight to your nearest accident and emergency (A&E) department at your local hospital.

The way that eye injuries are treated will depend on the extent of the injury, the symptoms and, in some cases, how the injury was caused. Infections from eye injuries are rare. However, eye infections can be severe, so it is likely that antibiotics will be prescribed in order to help prevent infection.

Referral to an eye specialist

You will need to be referred to an ophthalmologist (a specialist in eye conditions) for specialist treatment if:

your injury was caused by a small, high-speed foreign body, such as a

stone thrown up by a lawnmower

your injury was caused by chemicals getting into your eye

there is a foreign body in your eye that cannot be removed by your GP

you have severe pain in your eye and/or your vision is severely affected

there may be damage to your retina (the light sensitive layer at the back of your eye)

you have a deep cut in your orbit (eye socket)

your eye injury becomes worse or shows no improvement on a daily basis

you have had recurring eye injuries

Removing a foreign body

If there is a foreign body in your eye, such as a piece of grit, your GP or a doctor at the accident and emergency (A&E) department of your local hospital, may try to remove it. They will put anaesthetic eye drops in your eye first in order to numb it and prevent any pain.

The foreign body may be stuck underneath your upper eyelid, particularly if you can feel something there, or if you have scratches or grazes (abrasions) on the top half of your cornea (the transparent outer layer of your eye). If this is the case, it may be necessary to gently turn your eyelid inside out to remove the foreign body.

Once the anaesthetic eye drops have worn off, your eye may feel a bit uncomfortable until the abrasion heals. You may also be given antibiotic eye drops (chloramphenicol) to use for

five days. This reduces the risk of infection.

If the cells that line the outer surface of your eye (epithelium cells) are damaged, you may be prescribed eye drops (cyclopentolate) that prevent pupil spasm (involuntary contraction) and give the cells time to heal.

However, cyclopentolate is not usually recommended for women who are pregnant.

Treating eye pain

If your eye is painful, analgesics (painkillers) may be recommended in order to help reduce the pain. This will usually be in the form of paracetamol or ibuprofen.

However, ibuprofen should not be taken if you have certain medical conditions, such as asthma. Aspirin should not be given to children under 16.

Do not take aspirin for pain relief if your eye is bleeding because this will increase the risk of bleeding.

Preventing infection

In order to prevent infection in your eye after an injury, you may be prescribed a course of eye drops and ointment containing an antibiotic called chloramphenicol. Most people will need to take the eye drops four times a day and use the ointment at night before bedtime, for seven days.

However, you may not be able to take chloramphenicol if:

using eye drops four times a day is not possible for you, for example, it interferes with work or school

you are pregnant or breastfeeding (or if you are trying to get pregnant)

you, or someone in your family, has had a condition that affects the

components of your blood, such as aplastic anaemia (a lack of iron in the blood caused by toxins)

If you cannot take chloramphenicol eye drops, you may be prescribed eye drops that contain fusidic acid. These should be used twice a day for seven days.

If you usually wear contact lenses, you should not do so until your eye injury has completely healed. This is because some of the ingredients in eye drops can build up in the contact lens and cause irritation. If you are prescribed antibiotic eye drops, do not start wearing your contact lenses again until 24 hours after finishing your treatment.

If there is a large corneal abrasion present, you may be treated with eye drops (cycloplegia) as they can also prevent an eye spasm (involuntary contraction).

Using eye patches to cover a corneal abrasion is no longer recommended. This is because it does not reduce the healing time or reduce pain.

Treatments for iritis include:

mydriatic eye drops – these dilate (widen) the pupil to help the eye heal

steroid eye drops – these help to reduce the inflammation (swelling) of the iris (the coloured part of the eye)

steroid tablets or steroid injections to the eye may be recommended in severe cases of iritis when eye drops have not been effective

Preventing eye injuries

Many eye injuries are preventable if you take appropriate safety precautions. The advice listed below can help reduce the risk of sustaining an eye injury.

When using household products, such as cleaning fluids and bleach, always read the labels carefully, work in a well-ventilated area, and make sure that any spray nozzles are pointing away from you before spraying.

Wash your hands thoroughly when you have finished and make sure you do not rub your eyes if you have been handling cleaning fluids.

Wear safety goggles while using garden equipment, such as lawn mowers, to keep your eyes safe.

Take care when inserting or removing contact lenses. Follow the directions for keeping them clean and sterilised, and avoid wearing them for long periods of time. Never sleep with your contact lenses in.

Avoid looking directly into the sun. When outdoors on sunny days, wear a good-quality pair of sunglasses to protect your eyes from harmful ultraviolet light.

Cover your eyes if you use a sun lamp

Avoid rubbing your eyes

Safety at work

To reduce the chances of eye injuries happening at work, always ensure that you follow health and safety guidelines. For example:

wear safety glasses or goggles when using power tools, such as drills or saws, when using a hammer, and when mixing or spraying chemicals

always make sure that you wear the appropriate safety eyewear for your occupation. For example, if using an arc welder, wear an approved face mask to prevent sparks entering your eyes

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Q1) The cornea is made up of how many layers?

Q2) Each eyeball is set into a protective socket of bone, what is this known as?

Q3) There are many types of eye injuries, which type of eye injury is caused by inflammation (swelling) of the iris (the coloured part of the eye that controls the amount of light that enters) it can be caused by trauma to the eye?

Q4) How are corneal abrasions usually caused?

Q5) Name two of the five symptoms of corneal abrasions

Q6) Name two of the eight symptoms when you should seek medical advice

Q7) Name two of the five causes of eye injuries

Q8) If chemicals are involved with your eye injury how long should you flush your eye with clean water or sterile fluid for?

- A) You should not flush your eye out
- B) 5 to 10 minutes
- C) 10 to 20 minutes

Q9) In order to prevent infection in your eye after an injury, you may be prescribed a course of eye drops and ointment containing an antibiotic called chloramphenicol. Name one of the three reasons why you may not be able to take chloramphenicol;

Q10) Using eye patches to cover a corneal abrasion is no longer recommended, why is this?d to improve esthetics in cases with flat smile line?

Name:

GDC Number:

Address:

Postcode:

Telephone no: (in case of any queries)

Signed:

Date:



British Institute
of Dental & Surgical
Technologists

British Institute of Dental & Surgical Technologists

44-46 Wollaton Road,
Beeston,
Nottingham
NG9 2NR

Telephone: +44(0)115 968 3181
Fax: +44(0)115 925 4800
Website: www.bidst.org
Email: secretary@bidst.org