

Risks associated with your anaesthetic

Section 5: Damage to the eye during general anaesthesia

During a general anaesthetic it is possible for your eyes to be damaged. This is an uncommon or rare event. The types of damage that can occur, and its consequences and treatment are described in this article.

Damage caused during surgery to the eye itself or associated with anaesthesia for eye surgery is not described here. You can talk about this with the eye surgeon or specialist anaesthetist who is looking after you.

What is the most common type of damage?

The most common type of damage to the eye that can occur during or after a general anaesthetic is a **corneal abrasion**.^{1,2}

A corneal abrasion...

The cornea is a superficial clear layer of the eye. An abrasion is a tear or graze of this layer. Corneal abrasions often heal without long-term effects on vision, but a scar may remain on the cornea. This may not be noticed during normal vision or it may cause a dark or blurred spot in the affected eye.

What other damage can occur?

Eye injuries leading to loss of eyesight are very rare.³ These include:

- ▶ Pressure may be accidentally placed on the eyeball during surgery. This could cause an injury to the eye or block the eye's blood supply. Pressure may be more likely if you are positioned face down to facilitate your operation. Anaesthetists are trained to take a great deal of care to position your head and neck, but it can be difficult to achieve a good position when you are face down, especially in people who are overweight. Operations on the spine have been particularly linked with sudden loss of vision, although this remains uncommon.
 - ▶ The eye's blood supply may be affected for another reason, such as a low blood pressure during the operation.
- Overall, it is very rare to suffer any of these problems and lose sight in an eye. Loss of sight following general anaesthesia is so rare that it is difficult to give an accurate figure for the risk: one large study found that it occurred in 1 of over 60,000 patients studied.²
- Other possible eye problems following a general anaesthetic may include:
- ▶ Pressure on nerves in the eyebrow area may cause a droopy eyelid.
 - ▶ Protective tape or eye ointments used to protect your eyes from corneal abrasions may cause temporary bruising of the eyelids or irritation of the eyes.¹ Redness of the eye, blurred vision and the feeling that there is something in the eye may last for up to eight hours.
 - ▶ A few operations are performed in an extreme head down position (for example, some gynaecology operations). This can lead to swelling of your eye lids which usually resolves within a short time.
 - ▶ If you have glaucoma (giving you high pressures inside your eye) your anaesthetist will need to take extra care to protect your eyesight during surgery.

The rest of this article describes the cause, treatment and consequences of corneal abrasions.

How do corneal abrasions happen?

Most abrasions happen because your eye does not close fully during the anaesthetic and the cornea becomes dry. The dry cornea may stick to the inside of the eyelid and the abrasion occurs when the eye opens again.

Approximately 6 out of 10 people (60%) do not close their eyes naturally when they have a general anaesthetic.¹ In addition, fewer tears are produced during an anaesthetic causing dryness in the eyes.

Corneal abrasion can also occur because something rubs against the exposed cornea while you are anaesthetised. This may be a surgical drape or other equipment. Care is taken to protect your eyes, and to ensure that they are fully closed during a general anaesthetic.

What is done to prevent corneal abrasions?

Corneal abrasions can usually be prevented by careful protection of the eyes.

To prevent your eyes becoming dry, small pieces of sticking tape are used to help your eyelids close properly during your anaesthetic. This has been shown to reduce the chances of a corneal abrasion occurring.^{1,4} Bruising of the eyelid can occur when the tape is removed, especially if you have thin skin and bruise easily.

Sometimes, your anaesthetist may use a gel, an ointment or eye-drops to moisten your eyes during your anaesthetic. These may be helpful if tape cannot be used or if your eyes need to be opened briefly during some types of surgery.⁵ Eye ointments can sometimes cause temporary eye irritation or blurring of vision following an anaesthetic.

Anaesthetists are trained to take care that nothing rubs against your eyes. If your surgery requires you to be positioned lying on your front (e.g. back surgery), special goggles, cushions or eyepads may be used to protect your eyes.

How often do corneal abrasions occur?

Following a general anaesthetic, it is uncommon to suffer from a corneal abrasion that causes symptoms. A large study of over 60,000 patients having general anaesthetics found that about 1 in 1,750 patients suffered from a corneal abrasion that caused symptoms.²

The risk may be higher during certain types of surgery. A study of over 4,500 patients having brain or spinal surgery found that about 1 in 580 patients suffered from a corneal abrasion.⁵

Other studies, using a microscope to examine the eyes following an anaesthetic, have found that small corneal abrasions may occur more commonly than this. Around 1 in 25 patients may have small, otherwise un-noticeable corneal abrasions, even when protective eye tape or ointment is used.⁴

You may be more likely to suffer from a corneal abrasion if your surgery requires you to be positioned lying on your front or your side, if your operation lasts a long time, or if you are having surgery on your head or neck.²

What if I already have poor vision?

If you have poor vision, it is helpful if you tell your anaesthetist about it. This is because he/she can give you any extra information that you need to help you feel at ease if you cannot see well. However, this will not make any difference to the risk of getting a corneal abrasion, or to the ways in which your anaesthetist cares for your eyes while you are anaesthetised.

What happens if I have a corneal abrasion?

Corneal abrasions may be very painful. Treatment is aimed at reducing pain and preventing an eye infection. It may involve eye drops, ointments and an eye patch, as well as pain-relieving medicines. No surgical treatment is necessary. Healing usually takes a few days, after which the pain will stop completely.

When it is healed there may be a scar on the cornea. The effect of the scar on vision will depend on how big it is and where it is on the cornea. Many corneal abrasions heal and leave no effect on vision, although an eye specialist will be able to see the scar through a microscope. Contact lens users should take advice before using contact lenses again. Occasionally the abrasion will be right in the centre of the cornea and there may be some long-term blurring of vision.

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References

- 1 White E, Crosse MM. The aetiology and prevention of peri-operative corneal abrasions. *Anaesthesia* 1998;**53**:157-161.
- 2 Roth S et al. Eye injuries after nonocular surgery. *Anesthesiology* 1996;**85**:1020-1027.
- 3 Rupp-Montpetit K, Moody ML. Visual loss as a complication of non-ophthalmologic surgery: A review of the literature. *AANA Journal* 2004;**72**(4):285-292.
- 4 Grover VK et al. Comparison of methods of eye protection under general anaesthesia. *Can J Anaesth* 1998;**45**(6):575-577.
- 5 Cucchiara RF, Black S. Corneal abrasion during anesthesia and surgery. *Anesthesiology* 1988;**69**:978-979.



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