

Removal of an Eye, Artificial Eyes, and Socket Care



*Mr David H Verity, MD MA FRCOphth
Consultant Ophthalmic Surgeon*

Introduction:

Removal of an eye, or the inside coats of an eye, may be necessary for various reasons. However, regardless of the underlying disorder, and whether the eye sees or not, the decision to have an eye removed can be a difficult and emotionally demanding one. Nevertheless, surgery and subsequent rehabilitation can lead to a very acceptable aesthetic result, and in many cases the symmetry and colour match between the artificial and natural eyes can be very good indeed.

Qu: What are the possible treatments for an eye which does not see?

In general, it is better not to have surgery, with painted contact lenses, or shells (acrylic artificial eyes) worn over a blind eye often looking as good as a real eye. However, if a blind eye becomes increasingly painful despite the use of drops, or the appearance cannot be improved with a contact lens or shell (often due to shrinkage of the eye), then surgery should be considered as this addresses both the discomfort and allows an artificial eye (prosthesis) to be worn over the new 'surface' of the socket.

Qu: Is there anyone I can speak to who has had this operation?

Yes. A number of previous patients have kindly given permission to be contacted for advice and support; their contact details can be obtained on request.

Qu: How is an eye removed?

Essentially, there are two approaches. The first, called an enucleation, involves removal of the entire 'globe' (this includes the white part of the eye, or 'sclera'). In its place a permanent solid spherical implant (or 'ball') is placed deep within the socket to compensate for the loss of volume, and the muscles which move the eye are reattached to this implant. The superficial membranes (including the conjunctiva) are sutured over the front surface of this implant (or ball, which remains permanently covered), and once the surface inflammation has settled (within a few weeks), an artificial eye, or 'prosthesis' (similar to a shell) can be worn on top. This is held in place by the eyelids and is easily removed for daily cleaning. The deeper ball implant typically remains in place for life and usually requires no further attention.

The second approach is called an evisceration, in which the white part of the eye (the sclera) is not removed, but used as a natural wrapping material to cover the ball implant. This surgery carries the advantage of a more rapid recovery for the patient, and, because the insertions of the muscles to the sclera are not disturbed, the movement of the deep implant tends to be better.

Qu: I have heard that removal of an eye can cause inflammation in the *other* eye. What is this called and why does it occur?

An exceptionally rare form of inflammation, called ‘sympathetic endophthalmitis’, can occur in the healthy eye any time *after* an injury or operation to the *other* eye. This occurs because the exposed contents of an injured eye can activate the body’s immune system against the same tissues in the *healthy* eye. Although treatable, such inflammation can lead to loss of sight in the good eye.

Removal of an eye using the evisceration method (but not enucleation) carries this theoretical risk of such an inflammation. It should be noted however that such eyes have usually had previous injury or surgery, and the other normal eye is therefore already at risk, even before the eye is removed. The true likelihood of developing sympathetic endophthalmitis in the good eye after an evisceration is very difficult to determine, but is considered to be in the order of 1: 50,000. However, sympathetic endophthalmitis is treatable, and overall many more eviscerations are now performed than enucleations for the reasons outlined above. This writer has yet to encounter a patient with sympathetic endophthalmitis thought to be due to evisceration surgery.

Qu: How long do I stay in hospital, and when is the artificial eye first fitted?

During surgery, the deep implant that is placed tends to result in a gentle stretching of the socket tissues. Because this can result in some discomfort and nausea during the first 12 – 24 hours after surgery, patients are offered an overnight bed, and regular analgesia and anti-emetics are given. Only when the patient feels ready to be discharged does he or she go home. A review is scheduled for a week later when the dressing is removed.

At surgery, a temporary clear ‘shell’ is placed under the lids to help prevent the socket from contracting in the weeks after surgery. Thus, from the time of removing the pad at one week, until review by the prosthetist at about a month after surgery, the eyelids are open and only a clear plastic shell can be seen. Generally, this is not troublesome or alarming, although some patients prefer to wear a patch over the eyelids until the first (temporary) artificial eye is fitted at about one month. The prosthetist takes a mold of the socket in order to create a bespoke artificial eye (which matches the colour of the other eye), and this is fitted a few weeks later.

Qu: What problems can occur with wearing an artificial eye (prosthesis)?

The prosthesis requires cleaning several times each week, and this is most effectively done using cold water between (clean) finger and thumb. If over time the shape of the

socket changes, the fit of the prosthesis may not be optimal and any rubbing of the edge of the prosthesis in the socket may lead to irritation and / or mucus production. This may require a short course of topical steroid drops, polishing of the prosthesis, or even further surgery to improve the lining and/or contour of the socket.

Qu: How will I look after surgery, and when can I wear an artificial eye?

The artificial eye, or prosthesis, is designed and fitted by specialised colleagues called prosthetists. They have considerable experience in both developing and fitting a bespoke artificial eye, and monitoring the subsequent fit and health of the socket.

During the healing phase after surgery, the patient wears a clear plastic shell inserted under the eyelids to improve healing of the socket. During this interval any socket inflammation gradually resolves, and the first prosthesis, which is a temporary one but matched for colour with the other eye, is fitted approximately 4 weeks after surgery. The bespoke prosthesis is then developed, using the colour and characteristics of the fellow normal eye as a template, and is ready a week or two later.

Qu: After this surgery, are any further operations ever needed?

With the simple measures mentioned above, most artificial eyes give many years of good service. However, there are certain conditions which may require drops or further surgery to enable a prosthesis to be worn.

Qu: Why can the socket sometimes appear to be ‘hollowed, despite wearing the artificial eye?

Injury to an eye, or its removal, can also lead to loss of some of the volume of a socket, giving the eyelids a ‘hollowed’ appearance. This is due to atrophy (shrinkage) of the fatty cushions deep within the socket, and can occur even if a large ball implant has been placed after removal of an eye. This ‘hollowed’ appearance (known as ‘*Post enucleation socket syndrome*’) can be addressed by increasing the volume deep in the socket, this allowing a thinner (and therefore lighter) prosthesis to be worn. This can be done either by exchanging the ball implant for a larger one (or placing a ‘secondary orbital implant’ where no previous implant has been inserted), or placing another, flatter, implant along the floor of the socket. If further volume is required, a fat transfer into the upper eyelid can also be considered.

Qu: Surely a larger artificial eye can address the appearance of ‘volume deficiency?

Increasing the size of the prosthesis to compensate for socket volume deficiency can indeed address small degrees of ‘hollowing’, and in many patients is either adequate or preferable to undergoing further surgery. However, over time a large prosthesis tends to weigh on the lower eyelid (causing laxity), and may not move as well as a

lighter prosthesis. Although lid laxity can usually be treated by tightening the lid, if the main problem is volume deficiency, this also should be addressed.

Qu: The artificial eye is unstable – why?

For an artificial eye to sit comfortably in the socket, there needs to be a sufficiently large ‘pocket’ (conjunctival fornix) behind both the lower and upper eyelids. Shallowing of these fornices can lead to discomfort (due to irritation of the mucosal lining), mucus discharge, an unstable artificial eye, and difficulty inserting the artificial eye. This is addressed by ensuring that there is sufficient volume in the socket, and then enlarging the fornices either by redistributing local tissue, or by placing a graft of oral mucosa into the socket.

Qu: Where can I obtain further information on this subject?

To proceed with removal of an eye is a difficult decision for each and every patient, and raises many practical and emotional issues in the majority of individuals. Staff and patients at Moorfields Eye Hospital have developed an information DVD called ‘Removal of an Eye’ which explores many of these areas and answers more questions than can be covered in this leaflet. The DVD is freely available on request, but a small donation to the Hospital’s Charity ‘League of Friends’ is encouraged.

Qu: Am I allowed to drive after removal of any eye?

For private car or motorcycle drivers, if vision is normal in the other eye and there are no other medical conditions, the DVLA does not need to be informed:

Extract from the DVLA website:

“Monocularity and driving: Monocularity is a condition that you may need to tell the Driver and Vehicle Licensing Agency (DVLA) about.

Car or motorcycle driving licence holders: If you are a car or motorcycle driving licence holder - you will not need to tell DVLA about your medical condition.”

If you have any doubt about your fitness to drive, please contact the DVLA, using the following link:

http://www.direct.gov.uk/en/Motoring/DriverLicensing/MedicalRulesForDrivers/MedicalA-Z/DG_185682