

# Cataract Surgery

## What is a cataract?

Cataract is an opacity or clouding of the lens inside the eye, which makes the lens look white in the affected area.

The lens is suspended deep within the eye, behind the iris (coloured part of the eye). It focuses the light onto the retina (the light sensitive tissue at the back of the eye). The lens is normally clear, the pupil looking black because you are seeing the darkness inside the eye showing through it (see "Anatomy of the eye" information sheet).

Cataracts can form in one or both eyes, and can progress from small opacities to complete cataracts. The speed of progression varies between very gradual and very rapid. It is not known why many cataracts develop. They are more common in older dogs, but can occur in young dogs and can be present at birth. They can be inherited in some breeds and they can occur as a result of other problems such as sugar diabetes or diseases within the eye (inflammation, trauma or retinal disease). Diabetes is the single most common cause of cataracts.



Leo, a Cocker Spaniel with mature diabetic cataracts in both eyes



Leo's left eye with mature diabetic

## What treatment is there for cataracts?

At the moment the only proven treatment is surgery to remove the damaged lens. Not every cataract warrants surgery and not every cataract is suitable for surgical treatment. A full examination by an ophthalmologist is necessary to assess each patient and decide on the best management.

## The surgery

Your pet would usually be admitted on the morning of the surgery and no breakfast should be given. Water should not be withheld overnight. In diabetic patients it is usually advised that both food and insulin are withheld that morning, and decisions regarding feeding and insulin dosing are made based on blood glucose tests taken on

admission and repeated throughout the day.

After your pet is admitted, a pre-medicant is given for sedation and pain relief and eye drops are applied to prepare the eye(s) for the operation. The drops help to dilate the pupil(s) and reduce the effects of inflammation which always happens after intra-ocular surgery.

Once sedated, an ultrasound scan of the eye(s) is performed to look at the structures in the eye which are obscured by the cataract. This is to check for problems that may prevent or complicate surgery such as detachment of the sensory layer of the eye (retina) or rupture of the lens.

Cataract surgery is performed under a full general anaesthetic and a muscle relaxant is given so that the eye comes into the correct position for the operation and there is no pressure from the muscles behind the eye. This means that a ventilator is needed to inflate the chest during the procedure. Every patient is monitored very carefully during the surgery with modern monitoring equipment and specially trained staff.

The operation is very delicate and involves the use of an operating microscope and very tiny instruments. Two small cuts are made at the edge of the cornea, where it joins the white of the eye. The eye is then filled with a gel substance called viscoelastic which protects the structures within the eye and helps to keep the eyeball inflated. The lens is surrounded by a very delicate bag of tissue called a capsule. An area of this capsule is removed to get access to the cataract. The cataract is then removed using a technique called phacoemulsification, which is an ultrasound procedure that breaks

the lens into tiny pieces which are sucked out of the eye. Fluid is also being flushed into the eye at the same time.

The rest of the capsule is left within the eye, forming a bag into which it is possible to put an artificial lens. Modern lenses are made out of a soft acrylic material which means that they can be folded and injected into the lens capsule, through the same very small incision used for the cataract removal. Artificial lenses make the vision in the eye similar to what it was before the cataract developed. The lenses used in our patients are made especially for dogs and cats, and are bigger and more powerful than those for humans.



Jess, a diabetic collie with an intraocular lens implant in place after cataract surgery

It is not possible to implant a lens in every eye. Not having a lens implanted does NOT make the difference between being blind and having sight - it is like someone who is very longsighted not wearing their glasses and dogs usually adjust very well to this type of vision although this may take longer than in cases where lenses are implanted.

At the end of the surgery the viscoelastic material is flushed out of the eye and the wounds are closed with very fine dissolving sutures that are absorbed over the following few weeks, leaving only tiny scars.

Some dogs can have both eyes operated on at the same time. The main reason for doing this is that it reduces costs and avoids the stress for the patient of going through surgery twice. However a dog with one good eye will have overall vision which is almost as good as a dog with two eyes so it is not essential to have both eyes operated on.

After the surgery, patients remain hospitalised for 2-3 nights for monitoring of their intraocular pressure and intensive medication. Provided that their progress is satisfactory, they will then be discharged. Most dogs will see something the day after surgery, but it frequently takes a few weeks for the vision to be at its best whilst the eye adjusts to the effects of surgery and the artificial lens, and as the intra-ocular inflammation subsides.

#### **Aftercare**

The aftercare following cataract surgery is intensive because all dogs develop intra-ocular inflammation following intra-ocular surgery, and to a very much greater degree than in humans. There are several types of drops that are used, including anti-inflammatory drops, antibiotic drops/ointment, drops to dilate the pupil and drops to control the intraocular pressure. The anti-inflammatory drops are usually applied six times daily initially, but the number of applications gradually decreases over the next two months or so. There are also tablets that need to be given for a few weeks after surgery.

Your pet will need to be kept as quiet as possible for a few weeks after surgery. Pulling on a lead should be avoided for several weeks after surgery, as this puts up the pressure inside the eye and can

encourage bleeding or retinal detachment. This can be achieved by wearing a harness, and it is a good idea to buy one beforehand, which can be fitted at the time your dog goes home. A plastic Elizabethan Collar also has to be worn for approximately 10 days after the operation.

There will be at least four or five re-examinations within the first two to three months after the operation. Some patients, especially those with complicated cataracts, may need more check ups than average. Once the initial post op monitoring period is over all patients are recommended to have annual check ups for life after cataract surgery. These are best performed at Rutland House Referrals as the close monitoring of cases is very important in obtaining the best long-term result.

#### **Risks and complications**

The initial success rate of cataract surgery in dogs is approximately 90 - 95% which means that 5-10% of patients cannot see in the operated eye after surgery. Post operative complications are not uncommon over the next few weeks or months, so the longer term success rate is 75-80% of eyes operated on. However it is not uncommon for one eye to be successfully operated on when the other eye of the same dog fails, so in dogs that have both eyes operated on 80-85% will have improved sight in at least one eye long term.

There are several reasons why some patients may not have a successful outcome or may have a less than straightforward recovery and these include:

Inflammation - Every patient gets inflammation after surgery, no matter how smoothly the operation goes. This is usually well controlled

by the medications that are given. Occasionally there is more inflammation than average or the inflammation fails to respond to treatment, and this can lead to changes within the eye and can result in reduced or no vision or even loss of the eye. Inflammation is the most frequent complication and is the reason why frequent medications and regular post-operative check ups are required

Infection - This can be very serious, but is extremely rare. It is minimised by effective sterilisation of instruments, use of disposable (single use) instruments and tubing and pre- and post-operative antibiotic tablets and drops.

Wound breakdown - This means that the wound gives way. Again this is uncommon, but if it occurs another general anaesthetic will be needed to re-stitch the wound

Bleeding - A small amount of bleeding at the time of surgery is not unusual, and this is not a major problem. Very occasionally a larger haemorrhage can occur and this can affect vision.

Increased pressure - The pressure in the eye can increase dramatically in the first few hours or days post-operatively (what we call a pressure spike) but this is only transient. It is one of the main reasons animals are hospitalised after surgery, so that it can be managed immediately if it occurs. Rarely, a more severe increase in pressure may occur (glaucoma). If this problem develops, it will involve additional medication, more intense monitoring and possibly surgery. It can lead to blindness and even loss of the eye in severe cases which don't respond to treatment.

Ulcers - Occasionally the cornea (window of the eye) loses the surface layer. This is usually a minor problem that resolves within a week but it does limit the use of some of the more powerful drugs for controlling inflammation as these can make the ulceration worse.

Retinal detachment - This is an uncommon complication, the disturbance caused to the eye structures by surgery can cause the light sensitive tissue at the back of the eye to detach leading to loss of sight. This may happen immediately or weeks or months later.

Poor vision - Some dogs have additional problems inside their eyes (e.g. with their retina), which cannot always be detected before surgery, and this means that the vision is not as good as expected even if the surgery is successful. Suspect cases may have an electrical test (an electroretinogram) performed on the eyes to look for retinal problems before surgery but even this is not 100% reliable.

"After-cataract" - A small percentage of dogs that see well immediately after surgery may not continue to do so for the rest of their lives. This later deterioration may happen for many reasons such as some of the complications mentioned. However one such problem is known as after-cataract, in which a white membrane can grow across the lens capsule left in the eye after surgery. In most patients the amount of after-cataract that forms is relatively insignificant (it is never as dense as the original cataract), but it can occasionally affect vision. Having a lens implant has been shown to help reduce after cataract formation.

If after-cataract is very severe it can be removed surgically, although this is rarely done.



In conclusion, the success rate of cataract surgery in dogs is reasonably high (although much lower than in humans) and the majority do well after their operation. It is however a major undertaking for both owner and

patient, both with respect to the need for aftercare (medication and re-examinations) and cost. Therefore we need owners to be fully informed before they make the decision to proceed with surgery.

**If you have any further questions do not hesitate to contact the Ophthalmology department at Rutland House Referrals on 01744 853510.**