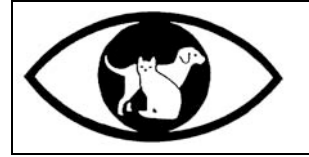


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## **CATARACT SURGERY IN ANIMALS**

### **Dear Client,**

This leaflet is designed to give you a very clear overview of cataract surgery in animals and it should assist you in making a decision about elective cataract surgery for your pet as well as deal with many of the questions owners may ask. It is our intention to assist you in gathering as much information prior to your pet's surgery so that you are fully informed. Please take the time to read this information as well as feel free to consult the many websites references we have supplied in this document so that you get a fair overview of cataract surgery from other independent sources. The ophthalmologists of the Johannesburg Animal Eye Hospital genuinely want you to understand what can be done for your pet and we strive to inform you, as well as perform a successful surgery as best we can. Our intention is to improve your pet's visual capabilities.

### **This document will cover the following:**

- What is a cataract and what causes cataracts.
- Pre-operative check list
- The surgical procedure [phacoemulsification surgery]
- Post operative results and potential complications
- Home care and post operative treatments
- Quotes for surgery
- Websites

### **What is a cataract and what causes cataracts:**

The lens is made mostly of water and protein. The protein is arranged to let light pass through and focus on the retina. Sometimes some of the protein denatures due to metabolic changes and starts to cloud a small area of the lens and loss of transparency occurs. Thus, by definition a cataract is an opacity of the lens. Over time, the cataract may grow larger and cloud more of the lens, making it difficult for your pet to see.

No one knows for sure what causes cataracts in animals but many possible causes have been speculated.

### **These may include;**

- Hereditary [genetic] predisposition in certain breeds
- Secondary to severe inflammation [uveitis] in the eye.
- Following some form of blunt trauma or even perforating foreign body which can strike the lens.
- Radiation following irradiating cancers near the eye.
- Electrocutation following a pet biting an electrical cable.
- Secondary to ageing [senile cataracts]
- Following medical conditions like Diabetes

## Pre-operation checklist:

It is important for us to ensure that your pet is healthy prior to an elective surgical procedure like this. Many patients with cataracts are in fact diabetics and thus are more likely to have anaesthetic problems. Careful assessment of the health of the animal is very worthwhile. The following assessments may / will be performed or requested prior to surgery.

Ophthalmic exam	General clinical exam
Dental examination	Blood glucose [If Diabetic]
Blood chemistry	Haematology
Other tests	

Should your pet have any known specific medical challenges then please inform the attending ophthalmologist and also supply any regular medication at the time of admission to hospital for the cataract surgery.

Preoperatively we want you to start some medications

Maxitrol eyedrops 3 times daily starting 5 days prior to the surgery.  
3 days before the surgery to start with Petcam/Metacam oral suspension

The products are anti-inflammatories and they act to reduce the occurrence of post-operative complications.

## The Surgical Procedure:

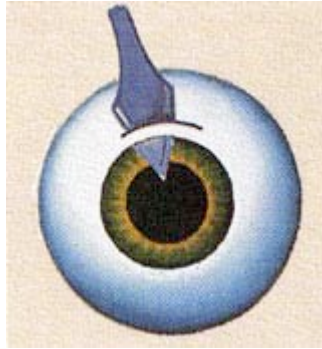
Once it is decided that the patient has a cataract the treatment is essentially surgical and the only question that arises is when? If there is visual impairment then surgery should be arranged at the client's earliest convenience. It is not a good idea to wait months or years as the lens progressively gets harder and technically this may result in a more laboured surgery with greater risk of complications. The concept of waiting for the cataract to "ripen" or "mature" is no longer applicable. However, in certain cases where there are associated complications or potential risks of complications, an early (even urgent) operation may be required - here the ophthalmologist would advise you.

A cataract can only be removed or treated by surgery and not by medications as is commonly thought. Techniques in man and animals have progressively improved over time and the current method for cataract removal is by a process called **phacoemulsification**. This is not laser treatment.

**Step 1:** Cataract surgery in animals is performed under general anaesthesia as the patient must be absolutely still. The patient is carefully positioned on its back under the operating microscope and the eye area is surgically prepared [fur clipped short]. Anaesthesia is maintained using gas anaesthesia which is the safest. Monitors are connected to the patient to assist a safe as possible anaesthesia.

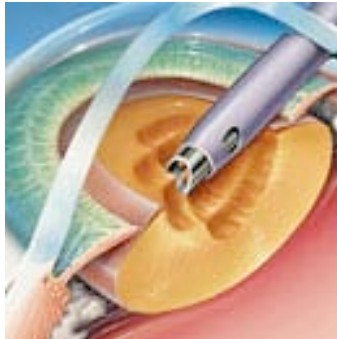
### **Step 2:**

A clear corneal incision [3.2mm] is made with a special blade and a few drops of adrenaline are injected into the eye to create immediate dilation of the pupil so that the lens becomes visible and the surgery can be performed safely through the dilated pupil. Following this, a blue dye is irrigated into the eye to assist in identifying the thin lens capsule. When this dye is irrigated out it may cause temporary blue staining of the patient's fur around the eye. In order to protect the delicate single layer of cells that line the inner surface of the cornea, a thick viscous solution is then injected into the eye.



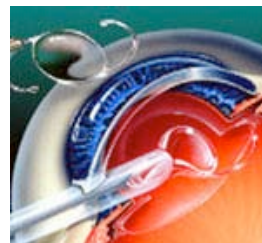
### Step 3:

A fine needle is introduced into the eye and a stab incision is made into the anterior lens capsule. A small circular piece of the lens capsule is removed. This has now opened the lens and the cataract can now be removed by **phacoemulsification**. This technique uses the energy of sound waves (high frequency ultrasound) to soften and break up the cloudy lens into a soft pulp so that it can be removed through the aspiration port of the instrument. The surgeon cleans out all visible lens fibers using a combination of the phaco energy as well as an irrigation / aspiration instrument. The latter is used especially to carefully remove lens fibers off the delicate posterior lens capsule. This is referred to as “polishing”. In many cases with dogs the posterior lens capsule still remains scarred and opaque which will inhibit the animals vision. If this scarring is severe then a small tear will intentionally made in the capsule and the thick jelly [vitreous] filling the back cavity of the eye may push forward slightly and move the opacity out the visual axis. In some cases the posterior capsule may also tear during surgery. This capsule is only 2 microns thick anyway!



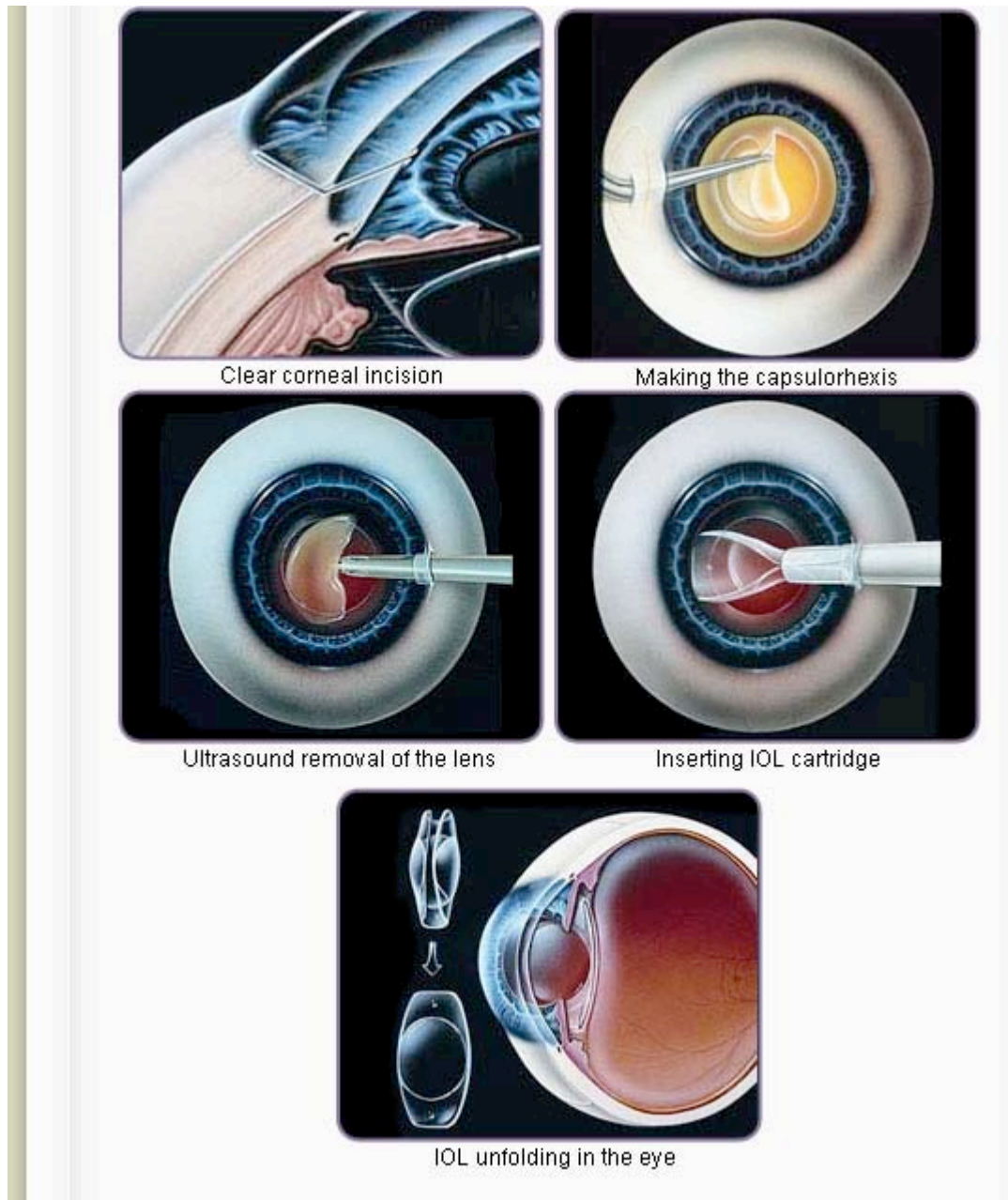
### Step 4:

When an owner has elected for the placement of an intraocular plastic / acrylic lens [IOL] then the small artificial lens is placed into a small introducer sleeve and this folded lens is then injected into the lens capsule. As the IOL is injected into the capsule, the IOL then springs open into its original shape and maintains its magnifying power. The IOL is then positioned carefully within the lens capsular bag. It is obvious that should the delicate posterior lens capsule be torn or has had to be removed due to opacities as mentioned above in Step 3, then no IOL can be placed otherwise the IOL will fall through the capsule bag into the large back chamber of the eye.



For many years animals have had cataract surgery without IOL's and have done very well. They will just remain a little more longsighted. IOL's seem to improve the patient's vision but are not essential to a successful post operative result to improved vision.

The diagrams below show the sequence of steps as described in the text above:



### **Post operative results and potential complications:**

**Post operative results:** Because the focusing device, namely the lens has been removed, patient's will be longsighted post operatively and this means that objects close up within a metre or so will always appear blurred even when an IOL has been placed. We also know that there seems to be an adaptation period for a few days after the surgery in which possibly the brain adjusts to the longsighted eye. Patients vary a lot in their response to improved vision post operatively so we find that some animals show improved sight within hours whilst others may take several days to show significant improvement. Improved vision should be seen within in the first 7 days post surgery. Many cases do see well after 1-2 days and this would still be considered quite normal. Placing an intraocular lens allows animals to see better sooner and this alone is a

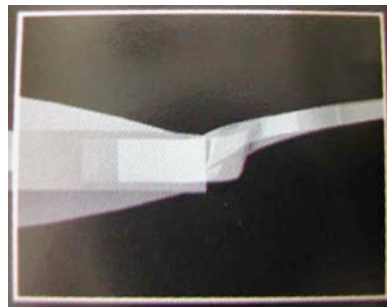
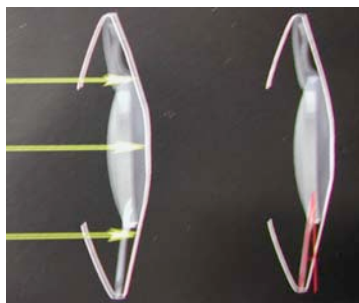
major advantage. If your dog appears to be “blind” after collection the day after surgery, this does not necessarily mean there is a post operative complication. It is critical that owners understand this concept.

### Post operative complications:

Phacoemulsification is the most successful technique available today for cataract removal and the procedure generally is very successful with most patients showing improved vision. The intention of cataract surgery in animals is for the patient to lead a more normal life than before surgery. All animals react differently after surgery and some may take longer to recover vision than others. Since this is elective surgery we feel it is very important for you to be aware of potential complications. These are identical what can happen after cataract surgery in people.

Serious complications are rare but are worthy of note so one realises that should these occur, they could lead to failure of vision. Some complications could include:

- Uveitis [inflammation] - All patients will show some degree of inflammation since the most delicate organ in the body, the eye has been opened. Patients will be treated with medications to prevent inflammation in the eye pre-operatively and the duration of medication post-operatively can vary a lot. Very rarely the inflammation may be difficult to control and this may lead to discomfort or even failure to restore vision or may require long-term treatment. It is well recognised that some patients may require long term, low dose oral or topical medications and in the rare occasion this may be for life. Diabetic patients seem to have a higher incidence of requiring longer term medication.
- Retinal detachment – this would be the worse scenario and would lead to complete blindness. Fortunately this is extremely rare.
- Bleeding in the eye – this is also rare but could occur intra-operatively, as a result of a difficult surgery, adhesions in the eye, damage of the iris or most commonly post operatively when the dog is back at home and is playing rough with other animals. If you see blood in the eye, please bring this to the attention of the ophthalmologists as soon as possible.
- Dullness [edema] of the cornea.
- Posterior capsular opacity [PCO] - Some patients may have remnants of lens fibres re-growing and forming a scar which can interfere with the visual axis and cause reduced vision. There is no known method of completely preventing this occurring. In man this is a common problem for many patients and in fact it is estimated that about 30% of people will develop posterior capsular opacities following their cataract surgery. In people this problem could be rectified by entering the eye a second time and aspirating these fragments or cutting the offending tissue away. Laser can also be used in some cases. It has been found that the incidence of this scarring is lower in animal patients that have had an intraocular lens placed. The modern intraocular synthetic dog lenses have a specially designed square edge which has been shown to limit the re-growth of the posterior lens capsule fibres and aids in maintaining a clear visual axis. [See Fig below].



- Endophthalmitis is a serious infection of the intraocular tissues, usually following intraocular surgery, or penetrating trauma. This is also fortunately very rare in animals.
- Glaucoma [raised pressure] may occur and it may be very difficult to control. It is usually associated with inflammation. In some patients, the intraocular pressure may remain so high that blindness may ensue.

- Displacement or dislocation of the intraocular lens implant may rarely occur.

## **Home care and post operative treatments:**

### **1] Home care:**

Once your pet is back at home, it is in your hands. At the time of discharge from our clinic we shall explain carefully all the medications and treatments that your pet requires. We trust that you medicate as we have requested and that at any time that you are unsure to please contact your veterinarian or our staff for assistance. Your pet may also have a plastic Buster Collar which will prevent your pet attempting to scratch. This should remain on until you judge that the pet will no longer wants to scratch the eyes. We advise that when the collar is removed, you be at home on that day. If there is build up of some mucous around the eye this may be wiped away with damp cotton wool. Do not abraid the cornea nor rub the area where the incision site and minute sutures are located.

Post operative cataract care should be aimed at keeping your pet reasonably quiet for the first month after surgery. Remember that close things may not be quite in focus to start with, so make allowances when out at exercise and around the house. You can expect improved sight to return from the next day to week post operatively as has been discussed above. Vision often seems to continue to improve for up to 2-3 months so it is worth being patient and not expecting too much too soon.

### **2] Exercise:**

For the first week your pet should be exercised only as needed to do his business and this should be on a short lead so that you can be sure that the eye is not bumped when going through a door or gate.

Gradually the short lead can be changed to an extending long lead after the first week. But do keep your pet under control for the first month after the operation.

Remember that the tissues of the eye are delicate. Try to avoid sudden movements, shaking of the head or ears, and games like playing ball or “killing” a favourite toy. This would specifically be applicable if an IOL has been placed.

### **3] Post operative drugs:**

#### **Treatments for your pet:**

The cataract surgery has been carried out with great care under an operating microscope and sterile theatre conditions. The final successful result which we are aiming at also depends on careful post operative nursing and conscientious medication at home.

In general most patients will require the following. There may be different medication for specific patient's situations.

**a] Maxitrol drops 4-6 x/day for the first month and thereafter at a lower frequency. This may continue for a few months and in the rare cases for life.**

**b] Rimadyl / Metacam / Petcam – an anti-inflammatory – [Cats will receive Metacam]**

**c] Oral Antibiotics for 5 days.**

### **4] Postoperative re-examinations:**

Part of the success of the post operative period is for you to strictly follow the recommended re-evaluations that we require. During these evaluations we shall give your pet a full examination and perform some routine procedures like taking the pressure in the eyes and monitoring any inflammation. We recommend these examinations at the following times after surgery;

**1 day:** Done in clinic before discharge

**Two weeks: [Optional]** Usually we ask you to arrange an appointment to see your own veterinary surgeon to split the time in the first month. This allows them to assess progress of your case, and to see the results that could be applied to other similar cases in their Practice.

**Two months and six months and then twelve months: [Optional]** These further check ups are used to monitor progress. It has been shown in human and animal cataract patients that some “relapses” of the red eye occur up to 6 months post op.

A reduced consultation fee is levied for all examinations following the first weeks examination. These are not included in the initial cost of the surgery and treatments. Should it be necessary to change or extend medications beyond that given at discharge, these costs also are not included in the initial charge for surgery

**Estimated Costs:**

Below is the current, **approximate** price schedule for cataract surgery for a **10kg animal**. For animals greater than 10 kg the cost will vary according to the extra anaesthetic volume used or greater dosage of dispensed drugs such as antibiotics and anti-inflammatories.

<b>Unilateral [one eye] cataract surgery without contact lenses</b>	<b>10000 Dhs</b>
<b>Bilateral [two eyes] cataract surgery without contact lenses/Unilateral with contact lens</b>	<b>14000 Dhs</b>
<b>Bilateral cataract surgery with intraocular lenses and consumables</b>	<b>16000 Dhs</b>

**The prices for intraocular lenses will vary according to importing exchange rate values – at present placement per lens is about 2000 Dhs**

Some cases may require other procedures or require extra consumables should the individual cases warrant it. **The charges for these are in addition to the above standard amount.** Some examples of these could include:

- Intravenous fluids in the case of geriatric patients.
- Extra viscoelastics.
- Use of sedation and TPA injection into the eye.
- Extra hospitalisation or specific feeding.
- Regular blood glucose evaluations in the case of diabetics patients.
- Laboratory blood tests as requested by the owners
- Airport collection and airline fees as requested by owners
- In some cases, the pressure inside the eyes may be raised after surgery [glaucoma] and this could potentially lead to retinal damage. This increase in pressure may require additional treatment with pressure reducing drugs. [Cosopt or Lumigan] which would be an extra cost.

**Please note:** The pre-operative ultrasound and Electroretinography will be conducted on all cases as these are essential tests to ascertain the health status of the retina prior to any surgery. They are included in the estimated costs above.

**Please note** that it may not be logistically possible that the same ophthalmologist that you saw at the time of the initial consultation, electroretinography and ultrasound examinations is the same ophthalmologists that will perform the surgery. Surgery will only be performed by either Drs Goodhead or Venter.

Visit our Website at:

[www.animaleyehospital.co.za](http://www.animaleyehospital.co.za)

[The following are other websites that have interesting information about animal cataract surgery.]

1] [www.eyevet.info](http://www.eyevet.info)

- 2] [www.animaleyecare.net](http://www.animaleyecare.net)
- 3] [www.animal-eye-specialists.com](http://www.animal-eye-specialists.com)
- 4] Wikipedia [look under “cataract:, phacoemulsification”]
- 5] [www.edow.com/html/cataracts.html](http://www.edow.com/html/cataracts.html)

Update: 22/03/08