CATARACT

WHAT IS A CATARACT?

The lens is a unique living ocular tissue in which cells reproduce constantly throughout life and is usually clear or transparent. The normal lens focuses light on the light-sensitive nervous tissue (retina) located in the back of the eye. The word cataract literally means “to break down.” Doctors refer to a cataract as any opacity (or cloudy change) of the lens that causes light to scatter. Cataractous changes of the lens may appear as small insignificant pigmented, gray or white “dots”, microscopic “blisters”, a “cracked glass” appearance, a diffuse haze, a “pearly” sheen, white streaks or a completely white lens. Cataracts usually begin as small dots or microscopic blisters and progresses to involve larger areas of the lens. The rate of progression is difficult to predict and may be very slow or quite rapid. At times cataracts appear to worsen overnight. Cataracts may develop in only one eye or in both eyes. Cataracts may occur during embryologic life but usually occur after birth. If a large portion of the lens becomes white, it prevents images from reaching the retina and blurred vision results. When a light is shined into the eye of a patient with a complete cataract, the patient only sees a white light and no images can be seen.

Mature Cataract with Lens-Induced Uveitis
WHAT SHOULD YOU DO IF A CATARACT IS SUSPECTED?

The first thing to do if your veterinarian indicates your pet may have a cataract of any size is to have your pet examined by a Veterinary Ophthalmologist. The lens is an important link of the total visual system, yet the health of the entire eye should be evaluated before the lens develops a complete cataract. Early evaluation of the eye with a cataract sometimes permits examination of the retina. If the cataract is complete or ‘mature,’ the retina cannot be directly examined and an ultrasound examination will be needed. At the time of the initial examination, the cataract may sometimes be identified as to cause, area of involvement and stage of progression. Not all cataracts lead to blindness. “Incomplete” cataracts may not impair vision significantly. If your pet has a cataract and has shown some visual loss, evaluation will include the consideration of and benefit of cataract surgery.

Even if surgery is not desired your pet’s eye(s) still requires evaluation and treatment. The eye recognizes the cataract as “foreign material,” causing “Lens-Induced Uveitis,” an inflammation inside the eye that speeds up the cataract formation, leading to destruction inside the eye and possible glaucoma (not just blinding but painful).

HOW DO YOU KNOW IF YOUR PET HAS A VISION PROBLEM?

Our pets are creatures of habit and love to please their owners. If vision loss develops slowly over a long period of time, your pet may adjust to your home and yard. Pets in familiar surroundings may readily move about even when almost blind because they have learned where all objects are. Signs such as bumping into objects, failing to retrieve favorite toys or catch tossed items and fear of being left alone may be signs of vision loss. Visual deficits are usually most noticeable when pets are taken from their home into unfamiliar environments. Visual deficits that occur in their familiar home environment often indicate severe vision loss or total blindness.

WHAT CAUSES CATARACTS?

Cataracts may result from problems in the animal's mother during pregnancy, injuries to the eye, inflammation within the eye (uveitis), internal diseases that have an effect on the eye such as diabetes mellitus, metabolic conditions or certain foods, chemicals and drugs. Although it may be difficult to name the
specific cause of a cataract, cataracts that develop in eyes free of signs of ocular disease are assumed to be inherited. Inheritance is the most common cause of cataracts in dogs. However, testing for diabetes is usually recommended in dogs with cataracts, especially those with other symptoms of diabetes (increases in drinking, urination, appetite, and weight loss). In cats, the cause of cataracts may primarily be inflammation in the eyes (uveitis) causing breakdown of the lens. We will examine your cat very carefully for evidence of uveitis and discuss this with you if appropriate.

**ARE THERE TYPES OF CATARACTS?**

The type of cataract may not be important for deciding whether surgery may be performed. Cataracts may be classified by age of onset, cause, physical appearance of the cataract, or state of development of the cataract.

### Different Types of Cataracts

A dog with complete cataracts giving a white appearance to the eyes.

**DIABETES AND CATARACT SURGERY**

Diabetic cats rarely develop cataracts. However, most diabetic dogs (regardless of how well their diabetes is managed or how early the diabetes is detected) will develop diabetic cataracts and become blind, usually within 6-16 months of the onset of the diabetes. Most diabetic dogs are excellent candidates for cataract surgery, but their diabetes and any cataract-associated inflammation must be well-controlled prior to surgery. If you have a diabetic dog, it is important that your pet be closely monitored for development of diabetic cataracts, so that anti-
inflammatory treatment can be started as soon as the cataracts start to form. This is because diabetic dogs frequently develop rapid-onset cataracts, which can cause severe cataract-associated inflammation.

Cataract-associated inflammation must be treated with antiinflammatory medications to prevent complications (such as retinal detachment or glaucoma), and to ensure that the patient remains a candidate for cataract surgery (significant cataract-associated inflammation prior to cataract surgery is associated with a reduced success rate, any may even prevent cataract surgery from being performed).

**SURGERY ON ONE EYE VERSUS TWO EYES**

The decision on whether to operate on one or both eyes is yours to make. At our hospital, cataract surgery is usually performed on both eyes at the same time. Advantages of operating on both eyes at the same time include:

- a single surgery is less expensive
- only a single anesthetic is required
- if surgery is not successful in one eye, then the patient will usually still have vision in the other eye

**CAN CATARACTS RETURN AFTER SURGERY IS PERFORMED?**

Once the cataract is removed, it will not "regrow." However, in all cataract surgeries, not all of the lens cells can be removed from within the capsule. Sometimes these lens cells will attempt to make new lens material, or will migrate across the posterior lens capsule and cause mild cloudiness and wrinkling of this capsule. This is similar to frost covering a window, and is called a secondary cataract. In humans, secondary cataracts can be removed by making holes in the posterior capsule with a laser. However, intraocular lens implants usually prevent clouding of the lens capsule, so that laser treatment is rarely necessary in dogs. Another way to prevent secondary cataracts in dogs is to make a small hole in the posterior lens capsule when cataract surgery is performed, so that the posterior capsule cannot become cloudy.
WHAT IS THE TREATMENT FOR CATARACTS?

There is currently no medical treatment known to slow the progression of, prevent the formation of or reverse the changes of cataracts short of cataract surgery. Kinostat is a topical ocular medication now being tested but is used only in diabetic dogs and can slow down, if not prevent, diabetic cataracts before they form. However this medication is still in clinical trials and is not readily available on the market. However, the presence of cataracts in the eyes causes damaging inflammation indefinitely, so topical anti-inflammatories are indicated even in blind cataractous eyes to keep the eyes healthy and the pet more comfortable longer. These drops will not improve vision, but they should delay long-term complications of cataracts (such as painful glaucoma).
Some owners will desperately try treating the eyes with topical drops promising to dissolve the cataract.

Surgery to remove the cataractous lens is the only known treatment in animals and man that will restore vision.

Cataract surgery is recommended after vision loss is affecting quality of life, but before the cataracts have had time to damage the eye.

**SHOULD MY PET HAVE CATARACT SURGERY?**

Cataract surgery is generally restricted to those patients who are developing a cataract in both eyes. If one eye has a blinding cataract and the other eye has a rapidly developing cataract or if rapidly developing cataracts are present in both eyes, surgery is recommended so the patient will not completely lose vision. It is also important to consider whether the patient is a good candidate for anesthesia. With continued improvements in veterinary medicine and anesthesia, age alone does not limit the possibility of surgery. With the use of modern anesthetic agents, successful surgery is performed on dogs and cats 17-18 years of age and older. The overall health of the patient needs to be assessed before surgery. This may include chest x-rays, EKGs, blood analysis or other procedures by your referring veterinarian. Cataracts may be removed from one or both eyes during the same surgery. Diabetic patients need to be completely regulated on insulin prior to surgery! Finally, you are the one who hears all the information and decides if surgery will be performed to restore vision for your pet.

**IS MY PET A GOOD CANDIDATE FOR CATARACT SURGERY?**

Cataract surgery involves a period of intense treatment and care both before and after surgery followed by an extended period of low level therapy. If you are unable to treat your pet, surgery is not recommended. Alternatively, if your pet will not or cannot be treated as required, he/she is not a good surgical candidate. Animals who “bite the hand that feeds them” don’t do well after cataract surgery.

Some patients require sedatives for the first three weeks post-operatively.

**WHAT WILL MY PET BE ABLE TO SEE AFTER SURGERY?**

Post-operative vision in uncomplicated cases is generally excellent (similar to
pre-cataract). However, the normal lens facilitates vision both by being clear (non-cataractous), and also by bending light to focus it on the retina. So, if a cataract is removed and a replacement lens is not inserted into the eye, then the post-operative vision will be defocused up close (the pet will be very far-sighted).

Replacement lenses are always recommended, unless there is a complication during surgery that would prevent safe insertion. Without a replacement lens, a pet may not have completely normal vision after surgery, but they do regain useful vision.

WHAT DOES CATARACT SURGERY INVOLVE?

The preparation for cataract surgery begins several days prior to the actual event. You will be required to apply drops to one or both eyes three times daily for three days prior to surgery to reduce inflammation in the eye(s). Cataract surgery is performed on an outpatient basis. Pre-operative testing (electroretinogram. ERG, gonioscopy and ocular ultrasound) may be performed prior to surgery to assess the eye(s) and evaluate your pet’s chances for successful cataract surgery. Testing can be done while awake but may require a short hospital stay for a few hours depending on what testing is needed. Some dogs will not allow testing without sedation or a short-acting anesthesia.

Bichon Frises, Labrador Retrievers and Poodles have a tendency towards post-operative retinal detachment, causing permanent blindness without retinal re-attachment surgery. Therefore, if the testing results are normal we recommend cryoretinopexy to staple the retina in place reducing the risk of retinal detachment from 92-94% to 12-14% in these breeds. These dogs require general anesthesia. Cataract surgery is performed 2 weeks after the cryoretinopexy. Dogs that do not require cryoretinopexy can undergo cataract surgery within several days to a week after the testing if the eyes have been treated with medication for at least 2 weeks before surgery. Glaucoma can occur in some dogs if the drainage angle of the eye is abnormal. In these cases endolaser is performed as a secondary procedure to reduce the chances of post-operative glaucoma.

PREPARATION OF YOUR PET FOR CATRACT SURGERY

Three days before the scheduled surgery you will be placing drops in the eye(s) three times daily (every 8 hours) to prepare your pet for the surgery. Two of the medications are anti-inflammatory drops and one dilates the eye.
Please use the medications the morning of the surgery.

Midnight the night before surgery food and water should be withdrawn by the owner so the pet is presented for surgery on an empty stomach.

Diabetics

Diabetics should not be fed the morning of the surgery and only $\frac{1}{2}$ the dose of insulin should be given the morning of the procedure. Monitoring of the blood glucose will be done several times the day of surgery.

Surgery

During the surgical procedure, the pet's respiration, oxygenation level of the blood and expired carbon dioxide is measured and intravenous fluids are given thru an intravenous catheter. Heart rate and blood pressure will be monitored.

An EKG will be attached to your pet so that the heart can be assessed during surgery. Surgery is performed using an operating microscope and sophisticated microsurgical instruments. The actual surgical procedure may last several hours and general anesthesia is normally for 60-120 minutes per eye. Your pet is placed on a ventilator to support respiration and vital signs are carefully monitored during the surgery.

We endeavor to place an artificial lens in each eye but not all pets can sustain an artificial lens. This will be determined during the course of the surgical procedure.

Dogs that do not receive an artificial lens can still see but will be very far-sighted and have difficulty seeing up close.

During recovery, your pet will be closely monitored and will be discharged from the hospital 2 to 6 hours after surgery. Because of the extremely small sutures used to close the incisions, an Elizabethan collar (E-collar) is placed on the pet so they will not injure their own eyes during the first 21 days following surgery. Postoperative medications are used to reduce inflammation and to prevent infection. Eye medications are applied approximately every 6 to 8 hours for the first few weeks. Other medications will be given by mouth once daily.

Post-operative Care

Most owners need to understand the commitment needed by them for successful cataract surgery. Your pet needs to wear an elizabethan collar for three weeks after surgery without taking it off or modifying the collar. Multiple
topical medications must be placed in the eye(s) waiting 10-15 minutes in between each type of drop.

Your pet cannot jump up and down from furniture, bite on hard toys, rough-house with other animals or family members or go up and down stairs. They cannot be the type to get excited when the doorbell rings. The normal activity you say is calm and quiet for your pet is not calm enough after cataract surgery.

The first postoperative examination is scheduled for the day following surgery. During that examination, the pressure within the eye(s) will be tested, presence of ulcers on the cornea of the eye(s) is evaluated and the eye(s) is checked for inflammation. Further examinations will be scheduled as needed to follow the progress of healing. If everything is uncomplicated, re-examinations are performed one week after, three weeks post-operatively, and seven weeks following surgery. If a complication arises, the rechecks will be at a closer interval. Some dogs form fibrin post-operatively requiring an intraocular injection of Tissue Plasminogen Activator (TPA), an enzyme used to dissolve the fibrin.

If TPA Intracameral Injection is needed it would incur addition cost. Fortunately this is uncommon.

Medication must be given at regular intervals. After the first three weeks, the chances of infection are very low and the antibiotics are discontinued or reduced. Inflammation is the main problem that must be overcome and controlled. Topically applied anti-inflammatory agents, both steroidal and non-steroidal are given as frequently and as long as needed to control inflammation. Due to the fact that dogs and cats are great scar tissue formers and their lenses are 3-5 times larger than humans, chronic treatment will be necessary as a maintenance dose. These treatments are usually once or twice daily and may be as infrequent as every other day. Some patients are completely off medication in 6 months. Most usually require low-dose maintenance therapy for the rest of their lives. Each patient is an individual.

WHAT ARE THE COMPLICATIONS OF CATARACT SURGERY?

The success rate in cataract surgery has improved markedly in the recent years with the advent of newer medications and microsurgical techniques. The overall success rate is 90-95%. This does not mean that if the surgery is not successful your pet will have 5-10% vision. It means that 90-to-95 pets out of 100 will have vision OR 5-to-10 pets will remain blind in spite of the surgery. Although the success rate has risen dramatically, there are still several complications that need to be anticipated to prevent them. Intraocular bleeding, elevation of intraocular pressures [glaucoma], retinal detachment, corneal incision...
breakdown, extreme postoperative inflammatory response, adhesions and self-trauma are possible complications. The risk of anesthesia is extremely minimal.

The chief complication which is always present is inflammation (uveitis) that we treat aggressively with medication post-operatively. The risks associated with surgery will be listed for you before the surgery. The risk of complications are higher than 5-10% in certain pets.

*If you have other questions, please do not hesitate to discuss it with us.*

**QUOTE FOR CATARACT SURGERY:**

**PRICES ARE SUBJECT TO CHANGE BASED ON THE CONDITION OF THE EYES ON INITIAL EXAMINATION AND PRE-OPERATIVE TESTING.**

This does not include medication or Elizabethan collars or if there is a need for additional procedures.

This is a quote giving you an idea what the potential costs could be.

**Note!! If cataracts are present the eyes may be inflamed because the cataract causes “Lens-Induced Uveitis,” an inflammation that occurs with cataract formation.**

*Even if you do not do cataract surgery it is important to have your pet examined.*

**Cataract Pre-Evaluation Testing:** initial examination would be needed first.

Separate appointment would be required for this testing.

- **Electroretinography (ERG)** = $400.00
- **Intravenous Anesthesia** (not always required) = $235.00
- **Gonioscopy** = $ 55.00 if needed
- **Ocular Ultrasound** = $375.00

$830.00 (w/o anesthesia) to $1,065.00 (with anesthesia)

**Diabetics:** Add $60.00 to $90.00 for glucose testing if anesthesia given (not discounted from surgical cost)

**Cryoretinopexy** $500.00 if needed + anesthesia cost (cryoretinopexy not discounted from surgical cost)
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<tr>
<th>Cataract Surgery One Eye:</th>
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<tr>
<td>With Surgery $90.00 additional for blood glucose testing: not included below in the quotes if diabetic</td>
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*No extra charge for artificial lens implantation; Does not include post-op medications or E Collar.*