



ANIMAL EYE CARE CENTER
ERIC M. SMITH, V.M.D.
Diplomate, American College of Veterinary Ophthalmologists

CATARACT FACT SHEET

QUESTIONS AND ANSWERS

What is a cataract?

A cataract is an opacity of the lens or its capsule. A cataract may be a tiny dot within the lens which is clinically insignificant and is known as an incipient cataract or it may be advanced as with a mature cataract and cause blindness.

What is the purpose of the lens?

The lens is situated behind the iris within the aperture of the pupil. The lens bends light rays so that they converge. If the light rays converge on the retina, a pet has 20/20 vision. If they converge in front of the retina, one is nearsighted and if they converge behind the retina, one is farsighted.

At what point is cataract surgery warranted?

Cataract surgery is indicated when vision is compromised sufficiently that surgery would result in a significant improvement of sight. For most dogs and cats, this is when their night vision is poor and day vision is becoming affected.

What is the ideal time to examine a pet with cataracts?

When the cataract is in the immature stage, preferably when the fundus (the back of the eye) is still visible, and sight remains. At this stage, the fundi can be evaluated for progressive retinal atrophy, retinal detachment and other hereditary or acquired diseases of the retina, optic nerve and vitreous.

How is cataract surgery performed?

The cataract is removed via phacoemulsification (ultrasonic waves which shatter the cataract into small pieces). This is followed by thorough irrigation and aspiration (suction) of remaining lens material and microscopic debris.

Are lasers used to remove cataracts?

No. Lasers are not used to remove the cataract in animals.

Can a cataract recur after it has been removed?

No. The cataract cannot recur, however, a pet or person can develop an after cataract which is an opacity on the lens capsule. The lens material is held within a clear capsule. At the time of surgery, a hole is made in the front of the lens capsule and all of the cataractous lens material is removed. The lens capsule remains within the eye. The lens capsule may be used to hold artificial lens if one is placed. Occasionally in people, and

commonly in dogs and cats, the posterior lens capsule will develop a blemish, wrinkle, dot or spot which is known as an after cataract. A lens capsule opacity may be removed with a laser if necessary. This is a common outpatient procedure for people and a very rare event (1 dog every few years) for a pet. Also, on rare occasion and usually in a young dog, there can be some lens epithelial cell regrowth which would require a second procedure to remove the cell growth.

Can an intraocular lens be placed in my pet's eye?

Yes. Intraocular lenses are commonly placed following removal of the existing cataract. Your pet's sight will be clearer and he/she will be able to perform more finite tasks that require better clarity if at least one intraocular lens is placed. If a pet is blind and the cataract is removed and no intraocular lens is placed, he/she will be farsighted (+16 diopters). This would result in useful functional sight and the ability to avoid objects in bright light and dark conditions, to go up and down stairs and perform basic tasks. He/she would not see small crumbs on the floor, catch treats in the air, spot a squirrel at 100 yards and might occasionally trip on a curb or a small object that appeared blurry. Nonetheless, the improvement from a blind or near blind state would be huge. If an intraocular lens were placed, he/she would be close to 20/20 (usually within 1 diopter) and have near normal sight. I have been unable to tell the difference clinically between a dog with one artificial lens vs. two. It makes sense that a dog with an artificial lens in both eyes would see better vs. a dog that is farsighted in one eye and sees close to 20/20 in the other eye, however, both dogs seem to perform similarly. Clearly the dog with one artificial lens is using that eye as his dominant eye.

Placement of an artificial lens is optional and not always possible. Cataracts that have been present for quite some time may lead to significant lens capsule fibrosis or opacity that cannot be removed through thorough vacuuming of the capsule towards the end of surgery. In this instance, it may not be in the best interest of your pet to place a clear artificial lens over an opaque lens capsule that is likely to become more cloudy in time. Instead, sometimes removal of the central portion of the back lens capsule may be performed to obtain a clear visual axis and eliminate the possibility of after-cataract formation centrally. Cataracts that are mature or beyond mature (hyper mature and have undergone resorption or breakdown) could result in significant lens capsule opacities and can thwart placement of an artificial lens.

Basically, if I do not believe that an artificial lens will stay where I put it or if lens capsule opacities are substantial, I will not place an artificial lens. Otherwise, I believe they are important to consider placing in at least one eye.

What is the success rate of cataract surgery?

90% - meaning comfortable, visual eye(s) longterm. The 10% failures (blindness) are usually related to postoperative glaucoma, retinal detachment and protracted inflammation.

Can my dog have cataract surgery if the cataracts have been present for a long time?

Yes. However, dogs with long-standing cataracts are more likely to have retinal degeneration, retinal detachment, lens capsule opacities, loose lenses, lens induced inflammation and potentially, protracted low-grade inflammation postoperatively. Clearly, the best time to intervene surgically is early vs. late.

What kind of tests are necessary prior to cataract surgery?

If your pet is older than 5 years old, preoperative bloodwork which would include a complete blood count and serum chemistry panel would be necessary to evaluate liver and kidney function, as well as electrolytes and red and white blood cell counts. If your pet's cataract(s) are not yet mature and the retina can be evaluated, then additional testing is not necessary. If the back of your pet's eye cannot be viewed at the time of his/her examination, an electroretinogram (ERG) would be necessary to determine whether his/her retinal function is within normal limits. There is no point in pursuing cataract surgery if retinal function is poor. This would be equivalent to having a wonderful camera with a clear lens and poor, or no, film.

An ERG is a test to measure the electrical activity of the retina. It is performed on an outpatient basis with your pet's pupils dilated and he/she sedated and kept in a dark room for 15 minutes so that his/her retinas may dark adapt prior to testing. Small electrodes are placed around the eye and a contact lens is placed on the eye with wires going to equipment which is relayed to a computer. A small light is placed in front of your pet's eye and several flashes of light are used to stimulate the retina which produces an average response on the computer screen. If your pet's result is acceptable and he/she is a reasonable anesthetic risk, cataract surgery may be performed. For pets with hypermature cataracts, ocular ultrasonography may be necessary to determine whether all parts of the retina are intact (i.e., no area of small retinal detachment). If the ERG results are below normal or an area of retinal detachment is detected, cataract surgery is not performed.

What about anesthesia?

Pets are anesthetized for approximately 2 hours to perform cataract surgery on one eye and approximately 3 hours to perform surgery on both eyes. All pets are given a preoperative medication to relieve their anxiety. An intravenous catheter is placed, intravenous fluids are begun and an induction agent is given to make them go to sleep. An endotracheal tube is then placed and gas anesthesia (isoflurane) is administered for the duration of the surgery. Patient's heart rate, blood pressure, respiratory rate, blood oxygen levels, CO₂ levels and body temperature are monitored throughout surgery. All pets are paralyzed and placed on a ventilator to facilitate proper eye position during surgery. The paralysis is reversed at the end of surgery and pets are weaned from the ventilator, are roused and placed in recovery. An analgesic injection is given to relieve any discomfort and promote a smooth recovery. Your pet's age does not make a big difference in anesthetic risk; however, the condition of your pet's heart, lungs, liver and kidneys does play a significant role. Provided heart, lungs, liver and kidneys are in acceptable condition, it is very unlikely that there will be a problem with anesthesia.

Are there special considerations for diabetic dogs?

Yes. Diabetic dogs are not given systemic (oral or injectable) corticosteroids. They are given topical corticosteroid eyedrops pre- and post-operatively. This may cause slight insulin resistance (i.e., may require 1/2 - 1 unit of additional insulin per dosage). Also, a diabetic should be well controlled before considering cataract surgery. Ketones must not be present in the urine and blood glucose curves or a fructosamine level must show that the diabetes is well controlled. Diabetics receive their food, water and insulin as normal the day before surgery but no food, water or insulin the morning of surgery. This will not be significant for a well controlled diabetic. For dogs that receive their insulin twice daily, food, water and insulin are given the evening after surgery. Diabetics tend to also have a high success rate with cataract surgery.

What is involved preoperatively on my part?

Pets must receive two different eyedrops 2 times daily for 1 week prior to surgery. These eyedrops pre-treat for inflammation. An oral antibiotic and anti-inflammatory tablet are begun the day before surgery. A 1-hour regime of eyedrops is required the morning of surgery prior to bringing your pet to the Animal Eye Care Center. These drops include an antibiotic and a pupil dilator. Pets are admitted to the hospital at 8:15a.m. and surgery is performed in the morning. Your pet will recover throughout early afternoon and go home between 2:00 and 4:30p.m. He/she will be able to walk but will still be groggy and will not recoup fully from the anesthesia for 24-36 hours. It is important that your pet be restricted from going up and down stairs and be confined the first night for safety purposes.

What about postoperative care?

Postoperatively, eyedrops are administered 5-6 times a day for 2 weeks, then 4-5 times a day for approximately 3 weeks then usually 3-4 times daily and tapered over a few months. Antibiotic and anti-inflammatory pills are given for approximately 10-14 days postoperatively. A protective elizabethan collar is kept on your pet from the time of surgery for approximately 2 weeks postoperatively. It is extremely important that your pet's activity be restricted and the collar be used at all times. The corneal sutures that are used are smaller than a piece of your hair and are hard to see with the naked eye. If your pet is allowed to rub his/her eye, one or more sutures could be dislodged, the incision could gape, necessitating additional surgery and a poorer surgical outcome. This is one of the few things that can ruin your pet's surgery. I reevaluate pets within 1-2 days after surgery, 2 weeks following surgery and approximately 5 weeks after surgery. The most labor intensive part for you is just before and after surgery.

When will my pet be able to see?

Your pet will be visual the evening after surgery, however, your ability to appreciate the vision may be effected by his/her grogginess from anesthesia, the awkwardness from the elizabethan collar, dilated pupils and somewhat blurred view immediately postoperatively. The sight will be significantly improved the next day and vision should be apparent. He/she will bump into objects because of the elizabethan collar and will gradually adapt to the collar and negotiate the surroundings better each day. You will not be able to appreciate how good your pet's sight is until the elizabethan collar is removed, usually 2 weeks postoperatively.

How much does cataract surgery cost?

-- You will be given an estimate at the time of consultation that is tailored to YOUR pet --

Protocol medications = \$180-200

1 eye = starting at \$3000 (not including protocol meds or artificial lens)

2 eyes = starting at \$5000 (not including protocol meds or artificial lens)

Each intraocular (artificial) lens = \$325

Pre-operative workup (if necessary): Bloodwork (CBC/serum chemistry panel) = \$144

Fructosamine level = \$75 (for diabetics)

Sedation and an ERG = \$410-445 (if blind & cannot view back of eye)

Ocular ultrasonography = \$256 (if suspect, or to rule out, retinal detachment)

A \$500 deposit is required 2 weeks prior to the cataract surgery. This deposit is not processed unless you do not cancel/reschedule the surgery more than 48 hours (2 business days) prior to scheduled date of surgery.

Post-op cost?

2 day recheck: Exam = No charge; additional medications (if necessary) are NOT included

2 week recheck: Exam = \$120, skin suture removal = No charge; diagnostics and any additional refill of medications (if needed) are NOT included

4-5 week recheck: Exam = \$120, sedation & reversal (to remove corneal sutures) = \$260-290

The second and third followup examination and refills on medication are not included. Post-op fees usually total approximately \$600. At the third and last postoperative visit, your pet is sedated, the corneal sutures are removed and the sedation is reversed. Food and water should be withheld 2 hours before this appointment. This procedure takes approximately 30 minutes and is done on an outpatient basis. It is often not necessary to evaluate your pet after this third visit just 6 weeks from the time of surgery.