

# Cataracts

## Basics

### OVERVIEW

- Opacity in the lens; the lens is the normally clear structure directly behind the iris (the colored part of the eye) that focuses light as it moves toward the back part of the eye (retina); if opacity is complete, it prevents passage of light to the back part of the eye (retina), leading to blindness in the affected eye
- “Cataract”—may refer to a lens that is entirely opaque or to a localized opacity within the lens; does not imply cause

### GENETICS

- Inheritance has been established for many dog breeds; most common mode of inheritance—autosomal recessive
- The number of individuals with genetic cataracts varies significantly between breeds; it has been reported to be as high as 10% in some breeds
- Inheritance has been established in the Himalayan (cat)—autosomal recessive

### SIGNALMENT/DESCRIPTION OF PET

#### Species

- Dogs
- Cats

#### Breed Predilections

- Over 135 dog breeds are suspected of having increased likelihood of having hereditary cataracts

#### Mean Age and Range

- Depend on cause
- Cataracts can develop at any age
- Genetic cataracts can develop as early as 6 months of age

### SIGNS/OBSERVED CHANGES IN THE PET

- Opacity or white appearance of the lens
- Related to the degree of vision impairment
- Vision loss may be noticed when cataracts are present in both eyes
- Cataract caused by diabetes mellitus (sugar diabetes)—may see signs of diabetes, such as increased urination (known as “polyuria”), increased thirst (known as “polydipsia”), and weight loss
- Cloudiness in the eye (specifically the lens) noticed before vision impairment—may be related to sclerosis, rather than cataract formation; “sclerosis” is a normal aging change in the lens due to changes in the lens fibers, it apparently has little to no effect on vision
- May be associated with inflammation of the front part of the eye, including the iris (known as “anterior uveitis”)—typically see cloudiness of aqueous humor (the “aqueous humor” is the transparent liquid that fills the



front part of the eyeball) due to increased protein content and suspended cellular debris (condition known as “aqueous flare”); scar tissue between the iris and the lens of the eye (known as “synechiae”); and decreased pressure within the eye (known as “low intraocular pressure”)

## CAUSES

- Heredity—most common cause in dogs
- Diabetes mellitus (sugar diabetes)
- Inflammation of the front part of the eye, including the iris (anterior uveitis)—secondary to formation of scar tissue between the iris and the lens of the eye (synechia) or altered aqueous humor (the transparent liquid that fills the front part of the eyeball) composition
- Trauma—injury to the eye, where something penetrates the outer surface of the eye and disrupts the anterior lens capsule, most commonly a cat-claw injury especially in puppies or kittens
- Senile—age-related; slowly progressive cataract in senior pets
- Congenital (present at birth)—inherited cataract; damage to the developing lens or eye while the puppy or kitten is in the uterus; may be associated with other congenital eye abnormalities
- Surgery
- Toxic substances
- Radiation
- Low levels of calcium in the blood (known as “hypocalcemia”)
- Nutrition—use of unbalanced milk-replacer diet in bottle-fed puppies and kittens
- Electric shock—chewing electrical cords or lightning strike

## RISK FACTORS

- Genetics
- Diabetes mellitus (sugar diabetes) in dogs
- Long-term (chronic) inflammation of the front part of the eye, including the iris (anterior uveitis)
- Progressive retinal atrophy (a group of eye diseases characterized by generalized deterioration of the retina, becoming increasingly worse over time); the “retina” is the back part of the eye; the retina contains the light-sensitive rods and cones and other cells that convert images into signals and send messages to the brain, to allow for vision

## Treatment

### ACTIVITY

- For safety, blind pets should not be allowed access to an in-ground swimming pool or elevated decks with open railings; use caution near stairs
- Restrict outside activity to fenced yards or leash-walks

### SURGERY

- Phacoemulsification is a surgical procedure in which ultrasonic vibrations are used to fragment and liquefy the lens, in order to remove the lens material; procedure of choice
- Ideal time for cataract surgery is the immature or early mature cataract stage Intraocular lenses—may be implanted safely at the time of surgery, so the pet will not suffer extreme farsightedness

## Medications

Medications presented in this section are intended to provide general information about possible treatment. The treatment for a particular condition may evolve as medical advances are made; therefore, the medications should not be considered as all inclusive

- Topical (applied directly to the eye) anti-inflammatory medication is recommended to prevent and treat lens-induced inflammation of the front part of the eye, including the iris (anterior uveitis); topical anti-inflammatory medications include flurbiprofen or diclofenac or a topical steroid, such as prednisolone 1% or dexamethasone 0.1%
- Topical atropine for lens-induced inflammation of the front part of the eye, including the iris (anterior uveitis)

- Non-steroidal anti-inflammatory drugs (NSAIDs) administered by mouth (oral administration) are used to treat lens-induced inflammation of the front part of the eye, including the iris (anterior uveitis); examples include carprofen, meloxicam, and tepoxalin

## **Follow-Up Care**

### **PATIENT MONITORING**

- Early immature cataracts—monitor regularly for progression of cataracts, in order to select the ideal time for surgery and avoid complications associated with cataracts
- Post-operative monitoring by the surgeon is critical for success

### **PREVENTIONS AND AVOIDANCE**

- Do not breed pets with cataracts

### **POSSIBLE COMPLICATIONS**

- Lens-induced inflammation of the front part of the eye, including the iris (anterior uveitis)
- Secondary glaucoma (in which the pressure within the eye [intraocular pressure] is increased secondary to inflammation in the front part of the eye)
- Separation of the back part of the eye (retina) from the underlying, vascular part of the eyeball (known as the “choroid”; condition known as “retinal detachment”)
- Movement of the lens out of its normal location (known as “lens luxation”)

### **EXPECTED COURSE AND PROGNOSIS**

- Long-term prognosis following cataract surgery is very good
- Some pets have increased risk for post-operative complications, such as those with pre-existing inflammation of the front part of the eye, including the iris (anterior uveitis), even if medically controlled; genetic likelihood of developing glaucoma; retinal abnormalities

## **Key Points**

- Cataract surgery is performed routinely with an overall 80–90% success rate
- Once the cataract(s) is/are removed, they cannot return
- Artificial lens implants will restore essentially normal vision
- Evaluation for surgery should be done early in the course of cataract development to avoid complications that may result in the cataract becoming inoperable, to allow time to plan for the surgery, and, in some cases, to eliminate the need and extra cost for an ultrasound examination of the eye and an evaluation of the electrical responses in the retina (procedure known as an “electroretinogram”)