Abnormalities of the anterior segment most commonly result in redness, pain, cloudiness, and loss of vision. The most common include inflammatory diseases of the iris and ciliary body (anterior uveitis), elevated intraocular pressure (glaucoma), and opacity of the lens (cataract).

**Anterior Uveitis**

The clinical signs of anterior uveitis include miosis, aqueous flare, hypotony, keratic precipitates, redness, photophobia, and deep corneal vascularization. When diagnosed, it is essential to then decide if the uveitis is from a primary ocular etiology or is an ocular manifestation of a systemic disease. There are four primary ocular reasons for anterior uveitis. They are corneal ulceration, cataract with lens-induced uveitis, ocular trauma, and primary intraocular neoplasia. If one of these is not the etiology, then the clinician must consider a systemic etiology. Systemic etiologies include idiopathic, immune-mediated, metastatic neoplasia (lymphosarcoma most common), and infectious causes. In general, approximately 50% of cases will fall into the idiopathic/immune group, 25% into the neoplastic group, and 25% into the infectious group. The variability is in the infectious group, where the type and likelihood of an infectious etiology will vary by geographic location and time of the year. In addition, the infectious etiologies differ between dogs and cats. In the canine, tick-associated disease (erlichia, RMSF, Lyme), mycotic infections, prothecosis, bacteremia, and septicemias are most common, whereas in the cat, feline leukemia virus (FeLV), feline immunodeficiency virus (FIV), toxoplasmosis, feline infectious peritonitis (FIP), cryptococcosis, and Bartonella are most common. Keep in mind that in the cat these are not mutually exclusive diseases. It is common for a cat to be infected with multiple etiologies.

When presented with a case of anterior uveitis of a nonocular etiology, the clinician must obtain a detailed history, perform a complete physical examination, and consider blood work for a complete blood count, serum chemistry, and serologic testing. In addition, a urinalysis, chest radiographs, abdominal ultrasound, fine-needle aspirate, cytology, and histology may also be indicated.

Treatment of anterior uveitis will depend on the primary etiology, which must be diagnosed, treated, and eliminated. In addition, topical mydriatics and anti-inflammatory therapy and possible systemic anti-inflammatory therapy may also be indicated.

Failure to control anterior uveitis may result in cataracts, glaucoma, phthisis bulbi, synechia, corneal edema, and blindness.

**Glaucoma**

Glaucoma is an increase in intraocular pressure (IOP) incompatible with the health of the eye. In general, when a Tonopen or Tonovet is used, most dogs have an IOP < 20 mmHg. The Tonovet will tend to read slightly higher than the Tonopen. For predisposed breeds with an IOP > 20 mmHg, treatment and possible referral should be considered. Though it can be debated, I do advise annual determination of the IOP in all predisposed breeds after three to four years of age. It is also essential to determine the IOP in all eyes with anisocoria, fixed and dilated pupils, uveitis, all red eyes, cloudy eyes, painful eyes, blind eyes, enlarged eyes, all eyes with a diagnosis of glaucoma on therapy, and the contralateral eye in all dogs with primary glaucoma in the affected eye. It is therefore essential that all practices have access to a working, reliable tonometer and know how to use it.

Once diagnosed, glaucoma is divided into primary and secondary and acute and chronic groups. Of these, acute primary glaucoma is the type most closely associated with retained vision following treatment. Treatment will include both medical and surgical management. Of the medical treatment options, topical prostaglandins, topical carbonic anhydrase inhibitors, and oral carbonic anhydrase inhibitors are the only medications with significant efficacy in the dog. Surgical options for a visual eye will include diode laser therapy, preferably endolaser and/or implantation of a drainage device. Chronic glaucoma is typically blind and painful, requiring enucleation or intrascleral prosthesis.
Cataract
First, cataracts must be differentiated from lenticular (nuclear) sclerosis, a normal change that occurs with aging. Sclerosis occurs in all animals at middle age and is seen first in the dog or cat at approximately six years of age. It is a change in central density and does not prevent a fundic examination or vision.

Cataract is defined as any opacity of the lens or its capsule. Cataracts are then divided by severity (incipient, immature, mature, or hypermature), by location (capsular, cortical-anterior, posterior, equatorial, or nuclear), by etiology (inherited, metabolic, traumatic, inflammatory, electric, nutritional, radiation, or toxic), and by age of onset (congenital, juvenile, adult, senile). The most common reasons for cataracts in dogs are inherited and diabetes mellitus. It is important to know that all dogs with diabetes mellitus will get cataracts, with > 60% cataractous within a year of onset of diabetes. Of those dogs requiring surgery, diabetes may account for 30% to 50% of surgical cataracts.

The treatment of choice for progressive and vision-impairing cataracts is phacoemulsification with intraocular lens implantation. The success of this technique is generally considered to be 90% to 95%. For those animals with a significant cataract that do not undergo lens removal, the veterinarian must monitor for lens-induced uveitis, retinal detachment, and secondary glaucoma. Monitoring of IOP and treatment with topical NSAIDs is generally indicated.

The lens may also luxate. This is most common in the terrier breeds and has been shown to be inherited in a simple autosomal recessive fashion. There is a DNA test for the terrier dogs for primary lens luxation.

References