

Lens Luxations and Subluxations



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Eye Care for Animals

Lens Luxations and Subluxations

The function of the lens is to refract incoming light rays to focus an image on the retina. The lens is supported in position by the ciliary zonules. These zonules are attached to the ciliary processes of the ciliary body and insert at the lens equator. The lens lies just posterior to the iris within the patellar fossa of the vitreous.

Dislocation of the lens from its normal position in the patellar fossa is termed luxation or subluxation, if incomplete. Lens instability develops when there is break down or degeneration of the supporting zonular structures. In many breeds this is also accompanied by degeneration of the vitreous.

Primary lens zonular breakdown may occur early in certain breeds and is associated with abnormal structural development of the zonules. Breeds predisposed to primary lens luxations include terrier breeds, such

as Sealyham Terriers, Jack Russel Terriers, Wire-Haired Fox terriers, Miniature Bull Terriers and Terrier crosses, the Tibetan Terrier and the Shar Pei. Clinical experience indicates that Australian Cattle Dogs/ Blue Heelers and Chinese Cresteds are also predisposed. More sporadic cases occur in Spaniel breeds, German Shepherds and Border Collies. Dogs may present with lens luxation or subluxation as early as 3-6 years of age. The mode of inheritance appears autosomal recessive in the Tibetan Terrier and Shar Pei and is undetermined in the other terrier types. Lens displacement in dogs older than 10 yrs may be associated with a senescent zonular degeneration or present as late onset primary luxation in the terrier types.



Secondary causes of lens zonular degeneration or lysis may include: trauma, chronic uveitis, hypermature cataracts with lens capsular contraction placing undue stress on the lens zonules as well as enlargement of glaucomatous globes (buphthalmos). Lens luxations in feline patients are usually due to secondary changes.

Other differentials include congenital or developmental abnormalities in lens size, shape or position as seen with microphakia (small lenses),



spherophakia (round lenses) and lens colobomas (equatorial lens defects).

Clinical signs of subluxations may be subtle in the early stages with alterations in pupillary contour or asymmetry of the iris-lens diaphragm or anterior chamber depth which is best visualized in cross section using a narrowed slit lamp beam. Tufts of vitreous may protrude through the pupillary aperture as silvery or cloudy strands in the anterior chamber.

A dilated ocular examination may allow visualization of the lens equator and zonules or a classic aphakic crescent. Increasing lens movement (phacodonesis) may be appreciated and in severe cases iridal movement can be seen (iridodonesis). Early discomfort from uveitis and/or iritis may be associated with progressive lens instability and ocular hypotension or even hypertension may be present.

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These cases should be differentiated from other causes of uveitis and glaucoma. Gonioscopy may be of benefit in diagnosing primary glaucoma cases. Careful evaluation is essential as primary lens instability is usually a bilateral disorder.

Complete luxation of the lens into the anterior chamber is associated with acute onset of ocular discomfort, corneal cloudiness and an abnormal pupil.

Elevated intraocular pressure develops as the lens crowds the anterior chamber, displacing the peripheral iris leaflets forward and narrowing or closing the drainage angles. The lens creates a mechanical pupillary block worsened by the development of uveitis, iridociliary spasm and miosis which exacerbates the intraocular pressure elevation.

Corneal opacification may be temporary if associated with edema or more permanent secondary to mechanical trauma to the endothelium by the lens. This may result in pre- and post-operative corneal ulcerations and scarring.

Posterior luxations are more innocuous and may present with an aphakic crescent, pupillary abnormalities, cloudy eyes that may resolve and then recur as smaller lenses may shift from anterior to posterior chambers or may have corneal abnormalities associated with lens induced endothelial trauma. These patients are predisposed to retinal detachments due to traction by the degenerative vitreous. Surgery can be considered if the eye has other secondary signs or the lens fails to remain in the posterior segment despite

miotic therapy.

Treatment of anterior lens luxations requires surgical intervention to salvage the globe and vision. Lens extraction (lensectomy) can be performed by either phacoemulsification through a small incision with subluxated lenses followed by removal of the lens capsule via a larger incision or by the more routinely used intracapsular lens extraction technique (ICLE) for complete luxations.

With ICLE a 160-180 degree dorsal clear corneal incision allows removal of the lens and capsule in entirety. A combination of viscoelastics and instruments such as a lens loop or cryoprobe are utilized to perform lens extraction while minimizing trauma to the intra-ocular structures. Careful dissection of vitreal strands attached to the posterior lens limits tension placed on the retina. With marked vitreal liquefaction an anterior vitrectomy can be performed. In breeds predisposed to glaucoma the procedure can be combined with diode endolaser destruction of the ciliary processes to control intraocular pressure long term.

An intraocular lens (IOL) known as a ciliary sulcus lens can be sutured into place behind the iris diaphragm and anchored to the external sclera. The goal of placing a sulcus lens is to restore emmetropia, but doing so also increases surgical time and costs. Placement requires a vigorous vitrectomy and increases the risk of post operative complications such as iridal trauma, uveitis, vitreal incarceration leading to endophthalmitis, as well as lens



tilt and astigmatism and retinal detachments. Some patients may luxate the IOL (pseudophakic luxation) with breakdown of the supporting 9-0 to 10-0 nylon sutures. This technique is performed in few centers routinely at this time.

Medical therapy pre- and post-lensectomy usually involves a combination of topical and oral anti-inflammatories and topical and oral antibiotics.

Glaucoma therapy is indicated with IOP elevations pre-operatively and the carbonic anhydrase inhibitors such as Azopt and Trusopt are a safe choice. Use of drugs with powerful miotic effects are contra-indicated as they may exacerbate the pupillary block and result in further elevation in the IOP as well as worsen existing uveitis. This includes the prostaglandin analogues such as Xalatan, Lumigan and Travatan and the cholinergics such as Pilocarpine and Demecarium Bromide. Milder miotics effects are noted with the beta blockers such as timolol and combination products (Cosopt).

Post-operatively lensectomy patients without an IOL are aphakic and therefore far sighted (hyperopic). They will need a short period of adjustment to the hyperopia, especially if the surgical eye is the dominant eye. Contrary to popular belief, aphakes do not see upside down or backwards which was once a common misconception.

Early recognition of signs is key to ensuring early intervention. Prompt referral is essential for vision salvage as there is a poorer prognosis associated with prolonged pre-operative pressure elevations, severe uveitis and corneal endothelial trauma. Long term complications include secondary glaucoma, chronic uveitis, retinal detachments and corneal fibrosis.

Editor's box

Ocular Outlook

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Eye Care for Animals welcomes your comments on the Ocular Outlook.
Please e-mail your feedback to jgamarano@eyecareforanimals.com
or call Julie at (480) 424-3947 extension 6911.

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For completing their residency in Comparative Ophthalmology

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Avondale, AZ 85392

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Suite 3-H
Houston, TX 77064

Austin, Texas

Austin Veterinary Care Center
12419 Metric Blvd
Austin, TX 78758

OPEN HOUSE CELEBRATIONS

Houston

17395 Tomball Parkway
Suite 3-H
Houston, TX 77064
201-820-EYES

**Saturday, August 1, 2009
from 1:00 p.m. to 4:00 p.m.**

Please join us for hors d'oeuvres,
facility tour and professional camaraderie.

*Kindly RSVP by Calling Amanda
at 281-820-3937 before July 28*

Avondale

Avondale Pet Care Campus
13034 West Rancho Santa Fe Blvd.
Suite 102
Avondale, AZ 85392
623-872-EYES

**Wednesday, August 5, 2009
from 5:00 p.m. to 8:00 p.m.**

Please join us for hors d'oeuvres,
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*Kindly RSVP by Calling Zachary
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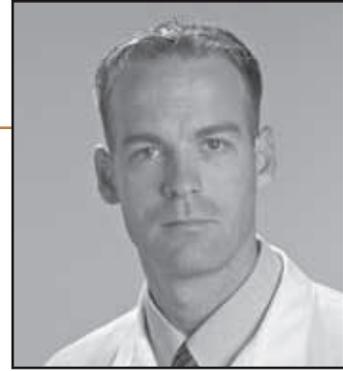
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CERF CORNER

Golden Retriever Uveitis

A clinical syndrome comprising the formation of thin-walled iridociliary cysts, proteinaceous exudation, and pigment dispersion, which typically culminates in glaucoma is well recognized in the Golden Retriever breed by veterinary ophthalmologists. Although not uncommon, this syndrome has been relatively poorly documented in the literature and some confusion surrounds the terminology used to describe it. It has been variably referred to as “pigmentary uveitis” or “Golden Retriever uveitis.” Little to no inflammatory infiltrate is noted histologically in affected eyes, however, suggesting that the term “uveitis” may be an inappropriate description of this pigmentary and cystic syndrome.



Douglas Esson
MRCVS, DVM, DACVO
Eye Care for Animals



The cysts, which form in the posterior chamber from the ciliary body epithelium, may migrate into the anterior chamber and occasionally rupture against the corneal endothelium. Free pigment of uveal origin may also be noted to accumulate on the iridal, lenticular and corneal endothelial surfaces and ultimately collects within the trabecular outflow meshwork. Additionally, coalescing strands of proteinaceous material are frequently noted clinically within the anterior chambers of affected animals.

Changes may be subtle at first and easily missed if the eyes are not examined carefully using a focal light source in a darkened environment. Suspicion of this syndrome should be aroused in cases of Golden Retrievers affected with recalcitrant or unexplained conjunctival redness and/or ocular discomfort.

Treatment is generally empirical, including topical and systemic anti-inflammatory agents, however secondary glaucoma frequently develops. In spite of the strong association between this syndrome and glaucoma, Golden Retrievers have not been significantly associated with POAG, melanosis-related glaucoma, or (hereditary) goniodysgenesis. Early referral and treatment maximizes the likelihood of successful long-term management.

The etiology of this syndrome is poorly understood, however genetic factors have been proposed based on apparent breed predilection as well as the absence of demonstrable infectious or neoplastic causes in the majority of cases. Research is ongoing in an attempt to further our understanding of this syndrome and ECFA patients and their data represent a significant part of this effort.

Check us out at www.eyecareforanimals.com

MEMO TO MANAGERS

Recruiting Tips: Recruiting During An Economic Downturn

A couple of questions running through many recruiting managers' minds these days include "how is this economic downturn going to impact my recruiting—and what is the talent pool like right now"?

While many companies may be in cost containment mode and have had to "right size" their workforce (i.e. downsize, layoffs), there is still a certain amount of recruiting that needs to take place. I'd like to point out some of the advantages of recruiting during tougher economic times. Benefits for you include—

- ✓ **Higher quality candidates will be available** to provide you with the skill set you are looking for. Individuals who might not normally have been drawn away from employers they were loyal to now find themselves without a job. This excess pool of great talent might allow you the opportunity to ramp up with a higher skill set for your team—allowing you to hire more "A" employees versus "B's" and "C's".
- ✓ **Less competition from other recruiters** who are tapping into the same talent pool provides you with a competitive advantage!
- ✓ **Employee turnover may decrease** as studies tend to find that fewer employees contemplate leaving their current jobs because they want job stability and they fear having to compete against higher skilled applicants.
- ✓ **Utilize College/University "Interns"** who will work for free to gain more experience and may bring a valuable skill set to your workforce. College interns may be proficient with various types of software, Internet research, and have other skills you can benefit from.

Newspaper recruiting ads can be expensive so don't forget to utilize less expensive Internet based recruiting means. Several resources you may find attractive include Craigslist.com, Careerbuilder.com, Monster.com, and WhereTechsConnect.com, to name a few. Another resource to consider is contacting Vet Tech School advisors. Tech schools can be searched by State through AllAlliedHealthSchools.com. Good luck with your recruiting initiatives during these tougher economic times!



Karen Webster, MBA
Chief Operations Officer
Eye Care for Animals

Six Eye Care for Animals

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