

LENS LUXATION

Within the eye, the chief focusing device is the crystalline lens which is most often referred to as just “the lens”. It is located behind the iris (the coloured portion inside the eye). Behind the lens is a gelatinous material known as the vitreous body. The lens is inside a sac called the lens capsule which is normally held in place by small fibres called zonules. The zonules are attached to the lens and to the ciliary body to keep the lens in position.

WHAT IS A LUXATED LENS?

If the zonules break, for any reason, the lens can either become partially loose (subluxated) or completely detached (luxated). When the lens is luxated to the rear (into the vitreous body), it is known as being posteriorly luxated. If the lens is completely loose and falls forward (into the anterior chamber), it is known as being anteriorly luxated.

WHAT CAUSES THE LENS TO LOOSEN?

There are several causes of zonular rupture and lens luxation:

- In many terrier breeds, lens luxation occurs due to a hereditary rupture of the lens zonules. The condition is most common in the Jack Russell, Sealyham, and Bedlington terriers.
- Serious trauma or inflammation within the eye (uveitis) can cause zonule ruptures. In cats, subluxated lenses are due to unknown cause and lens luxation occurs most commonly due to uveitis. When uveitis is present, several blood tests are necessary to determine the exact cause of the uveitis in the dog or cat.
- Lens luxations and subluxations may be congenital (present at birth) due to genetic defects. These are seen in very young patients.
- In any patient with glaucoma (increased pressure within the eye) that has been present for some time, the eye will enlarge and the lens will become loose.

WHAT ARE THE CONSEQUENCES OF A LUXATED LENS?

Cells inside the eye behind the iris, called the “ciliary epithelium”, *continuously* make fluid (called aqueous humor) that flows through the pupil, fills the front portion of the eye and then exits the eye at the “filtration angle” (all around the periphery of the iris). A lens that is anteriorly luxated (fallen forward) is extremely serious because it physically blocks the pupil, thereby obstructing the flow of fluid. The ciliary epithelium continues to produce fluid - which is then unable to escape from the eye. This causes an increase in pressure in the eye which is referred to as “glaucoma”. Within 72 hours of elevated pressure in the eye, glaucoma causes *irreversible* damage to the optic nerve and retina, resulting in *blindness and severe pain*.

WHAT IS THE TREATMENT FOR A LUXATED LENS?

The treatment for a luxated lens depends on whether the patient is able to see with the affected eye or if there is the possibility of vision. In many cases with long standing

luxated lens, the lens becomes a cataract which obstructs the ophthalmologist's view of the retina and optic nerve. A procedure called an electroretinogram (ERG) is performed to measure the function of the retina, allowing the ophthalmologist to determine if the patient has the potential to see after surgery is performed. If the chance of vision is good, lens removal surgery (called lensectomy) is performed. One of two procedures is performed to remove a lens. Phacoemulsification is a procedure which uses high frequency ultrasonic waves emitted from the tip of a small probe to break the solid lens into a liquid that can be vacuumed out of the eye through a 2.5mm incision. This method can ***only*** be used if the lens capsule (the sac the lens is inside) is still partially attached to the inside of the eye. If the lens capsule is too loose or completely detached, the entire structure is removed in one piece. This requires a much larger incision be made in the eye. If, however, irreversible damage has occurred and the eye is permanently blind, then one of two surgeries can be performed to relieve the pain:

- enucleation - the eye is removed and the lids are sewn shut.
- silicone implant - the contents of the inside of the eyeball are removed - leaving the cornea and sclera (the clear part at the front and the white of the eye) - and a silicone ball is placed inside. The shape of the eye is maintained and the eye moves normally. This procedure is for cosmetic purposes only. The clear cornea usually turns a hazy bluish colour with time.

WHAT ABOUT A SUBLUXATED LENS?

Treatment for lenses which are subluxated depends on whether the pressure inside the eye is normal or elevated. If the pressure is normal, then ophthalmic drops are used to ensure that the pressure remains normal. In this situation, frequent re-examinations are performed over time. If the pressure is elevated, lens removal is recommended.

WHAT ABOUT THE OTHER EYE?

During the initial examination, the opposite eye will be checked to ascertain if the zonules are intact. If the lens appears normal, regular exams should be performed to monitor its position.

WHAT HAPPENS AFTER SURGERY?

Your pet will go home the same evening but will need to return to our office the following day for a checkup. Frequent recheck exams are necessary after surgery to ensure proper healing is taking place - we will need to see your pet 1 week after surgery, then usually every other week or so for the next few months. From there, the Dr. will advise you how often he would like to see your pet over the following year. Extremely strict rest is required in the first 24-48 hours. After that time, **exercise will need to be restricted to an absolute minimum for 2-4 weeks.** Your pet will require time to adjust to his or her new vision. They will also have to adjust to wearing a plastic head collar. This collar is necessary to prevent them from damaging their eye by rubbing or by banging into their surroundings. **This head collar MUST stay on at ALL times for at least 2 weeks after surgery.** Medications are a very important part of the aftercare.

WHAT WILL I NEED TO DO AFTER SURGERY?

- Keep the head collar on at all times (even at night)! The stitches in the eye are very fine and can easily be damaged by a scratching paw.
- Keep your pet absolutely quiet.
- The prescribed medications are extremely important and failure to use them as directed could cause complications.
- When using eye drops, be sure to hold the lids open so the medication is placed into the eye. Wait 5 minutes between different drops so as not to flush out the previous medication before it has been absorbed. If you are required to use drops and ointment, use the ointment last as it is thick and forms a barrier, preventing any following drops from being absorbed.
- Gently wipe away any discharge from the eye with a clean, moist kleenex or face cloth.

Side View of the Eye

