



Bringing Ophthalmology in General Practice Into Focus

Elizabeth Barfield Laminack, DVM

Like many in our profession, I grew up spending all my free time around animals. Once in college, the top three career choices I wanted to pursue were veterinary medicine, optometry, or medical ophthalmology. I now spend my days in small animal private practice but combine my interests by pursuing additional education in veterinary ophthalmology.



Our **Practice to Practice** column gives veterinary professionals a forum to share their personal experiences with our readers—their peers. This column brings you narratives about how clinical medicine and practice development concepts became a reality for veterinary team members and their patients and clients. Whether you're inspired, cautioned, or educated—our goal is to provide a column that brings peers and practices together.

Integrating the desire to follow an interest in ophthalmology as well as taking the time to correctly diagnose and manage an eye case in private practice can be a challenge. Seeing a myriad of different ophthalmic cases can feel like a daunting task and makes many practitioners want to shy away from the prospect of ophthalmic pursuits. There are several practical ways to help provide the best possible outcome for your patients and also increase your ophthalmic knowledge.

THE OPHTHALMIC EXAMINATION

In an animal presenting as an ocular case, I begin an ophthalmic examination by viewing both eyes with minimal restraint of the animal's head, illuminating the good eye first if signs are unilateral. I use a strong penlight or transilluminator to check the pupillary light reflexes. I assess the palpebral reflexes bilaterally.¹

In order to facilitate accurate testing, our technicians support the caudal end of the animal against the technician's body, tip the chin up with minimal pressure on the head, and use the opposite hand to gently restrain the legs of the animal (**Figure 1**, page 82).

If the client can afford the services, I like to perform the following ophthalmic tests:

1. The **Schirmer tear test (STT)** provides an accurate representation of true tear production before any other liquids are placed in the eye; it also requires maximal patience from the animal.
2. The **fluorescein stain test** can be used to evaluate tear breakup time as well as the surface of the cornea, serving as a way to assess precorneal tear film (see **Why Assess Precorneal Tear Film?**, page 82).
 - » After applying the stain, allow the animal to blink once, hold the eye open, use a blue light to view the cornea, and count the seconds it takes for dark spots (drying in the tear film) or areas of drying to appear on the cornea.
 - » Afterwards, rinse the excess stain and evaluate the cornea for ulcers.^{1,2}
3. Lastly, proparacaine is applied prior to **intraocular pressure measurement** with a Tono-Pen.
 - » A tip for success is to know how to calibrate your Tono-Pen accurately. We keep a card with calibration directions in the case for quick reference. Tonometry is incorporated into the cost of the prac-

tice's senior wellness examinations and blood analyses. All animals 7 years and older receive an intraocular pressure check automatically.

For **ophthalmoscopy**, we often use a Direct Pan-Optic ophthalmoscope (welchallyn.com).

- Panophthalmoscopy provides a wider field of view with lower magnification than many other direct ophthalmoscopy techniques and is easy to use in the examination room (**Figure 2**). Dim the lights prior to routine ophthalmoscopy.
- Indirect ophthalmoscopy is often necessary to obtain a better view of the retina with a wider field of view (image inverted). A 20-diopter condensing lens with a penlight or transilluminator works well in general practice.^{1,2}

Regarding pupil dilation, make sure topical tropicamide is stored at room temperature. Sometimes it is accidentally refrigerated with proparacaine, which decreases the efficacy and slows the time it takes to dilate pupils. Also, if the pupils are not dilated but part of the fundus is visualized during the examination, note in the chart that the fundus was not fully examined. Do not write that the retina or fundus was within normal limits.

Why Assess Precorneal Tear Film?

Disorders of the precorneal tear film are related to keratoconjunctivitis sicca; drying is secondary to decrease in mucus or lipids and exposure. Exposure may be due to lagophthalmos, buphthalmos, and/or exophthalmos. The aforementioned may result from glaucoma, neoplasia, and/or neurologic dysfunction.

FOCUSING ON THE DETAILS

Ocular Cytology

- When performing ocular cytology, take care to avoid disturbing healthy cornea by brushing the area of the conjunctivae of the upper eyelid adjacent to the cornea (when determining therapy for conjunctivitis) or gently over the lesion itself (in cases of corneal ulceration).
- Provided it is kept clean and free of debris, Diff-Quick stain is appropriate for ocular cytology in general practice. Be sure to allow slides to dry adequately before staining.
- A gentle cytology brush called a microbrush with a disposable micro-applicator can be used as an alternative to the back of a scalpel blade or spatula.³

Ocular Prescriptions

- When prescribing different drops for home care, encourage clients to keep an Excel spreadsheet for ease in tracking drops administered (or provide one for your clients to use). This is especially helpful if a patient returns to the clinic for additional treatment



Figure 1. Proper, gentle restraint of a cat to facilitate administration of fluorescein stain to the cornea

or boarding.

- Triple BNP (bacitracin/neomycin/polymyxin B) ointment is a mainstay of antibiotic therapy of the eye; however, it has become more expensive.
- An alternative is ofloxacin (Ocuflox, allergan.com), 3 mg/mL in 5-mL solution, which provides better corneal penetration.
- An ocular solution created with cefazolin has been described, but its use is off label.⁴

OPHTHALMIC SURGERY IN GENERAL PRACTICE

Surgical repair of a prolapsed gland of the third eyelid is an excellent surgical skill to improve the ocular health of patients and practice income (**Figures 3 through 5**).

- The procedure only requires 6-0 PDS (polydioxanone suture) and a simple ophthalmology pack.
- This surgery does not usually present as a medical emergency, allowing institution of topical antibiotic and anti-inflammatory therapy for 7 to 10 days prior to the procedure.
- We are able to charge for our services appropriately because clients appreciate the treatment of a bright red cherry eye and the avoidance of keratoconjunctivitis sicca (KCS).
- The use of a pocket (embridication) or anchoring (tacking) technique to replace the gland instead of removal (excision) preserves the form and function

Ophthalmology Normals

Test	Normal Results
Schirmer Tear Test	20 ± 5 mm/min
Tear Breakup Time	20 ± 5 seconds
Intraocular Pressure	20 ± 5 mm Hg
<i>Suggestive of anterior uveitis:</i>	
<ul style="list-style-type: none"> • Intraocular pressure < 10 mm Hg or • Difference of 5 mm Hg between eyes 	



Figure 2. Gentle restraint with minimal pressure on the dog's head to facilitate panophthalmoscopy examination

of the third eyelid gland. This gland provides 35% of tear secretion.⁵

- In a study by Morgan, et al, 42% of dogs studied developed KCS if left untreated (75% in high-risk breeds), 48% treated with excision of the gland developed KCS (59% in high-risk breeds), and only 14% developed KCS if the gland was replaced (17% in high-risk breeds).⁶
- The level of anesthetic risk with this procedure is variable because most affected patients are young and healthy but many are brachycephalic breeds.

Other in-house ocular surgeries that help to facilitate expedient resolution of disease or injury are:

- Eyelid mass removal
- Eyelid laceration repair
- Temporary tarsorrhaphy
- Third eyelid flap removal
- Grid keratotomy (to promote healing of corneal ulcers).

FOUR EYES

Sometimes the management, expertise, and specialized equipment required to address an eye case exceed the time and cost available in general practice.

In this case, another pair of eyes—a specialist—is needed. The patient's veterinarian plays a vital role in educating the client and discussing cost or expectations regarding a referral.

Client Education

For example, when I evaluate a lens that has grey/blue hazing or a dense opacification, I tell the client what I am visualizing and let them stand close by so they can view it as well. If the diagnosis is nuclear sclerosis, I explain this normal aging change in the lens while describing or enabling the client to see the tapetal reflection and as much of the fundus as possible. I had one new client become a "regular" simply because I was the only veterinarian that both showed and illustrated to her the difference between various types of cataracts and nuclear sclerosis.

The Referral Process

If the diagnosis is a cataract, I talk with the client prior to referral about what blood chemistry and urinalysis may show regarding glucose levels and diabetes mellitus. Depending on the dog's age and examination results, we discuss referral for cataract evaluation as well as further staging, re-checks, and/or surgery.

When discussing referrals with clients, our local College of Veterinary Medicine appreciates it when we let our clients know beforehand the:

- Associated costs, such as the cost of specialist evaluation and cost per eye for surgical intervention
- Possibility that they may need to administer an extensive list of ocular medications 5 minutes apart multiple times daily
- General systemic status of the patient based on physical examination, CBC/serum biochemical profile, and urinalysis.

For practices not located within driving distance of a veterinary university or for other options, **locate a specialist at acvo.org**. Select ACVO Purpose; then Referral Process to locate a veterinary ophthalmologist.



Figure 3. Prolapsed gland of the third eyelid in a 5-month-old English bulldog prior to surgical intervention

Figure 4. The appearance inside the third eyelid after repair using a modified Morgan technique with double-layer closure

Figure 5. The appearance of the eye after surgical intervention*

*Note: The third eyelid may have a more swollen appearance after surgery than what is shown in this figure; it is important to educate the owner that swelling will decrease within a few weeks and that the dog should wear an E-collar during the recovery time when unsupervised.

CONTINUING EDUCATION

Many of the latest ocular diagnostic, treatment, and surgical recommendations are best presented by a specialist. A great venue for continuing education in ophthalmology is the ACVO Annual Conference, which offers a general practitioner's course that provides 8 hours of CE. After attending the 2011 conference, I can attest that the board-certified instructors provide helpful visuals and practical advice. The ratio of attendees to speakers fosters discussion with other practitioners and provides time to ask the presenters specific questions.

You can also combine the ACVO general practitioner's course with general registration. The resident's workshops, research presentations, and exhibit hall provide additional opportunities to pursue your interest in veterinary ophthalmology. The 2012 conference will be held October 17 to 20 in Portland, Oregon (acvoconference.org).

Finally, another great way to obtain ophthalmic CE is to see what courses your local veterinary school offers. You can also visit the American Veterinary Medical Association's Meetings and CE Calendar (avma.org/meetings/calendar/default.asp), which provides a complete list of CE opportunities across the country and is searchable by keyword. ■

BNP = bacitracin/neomycin/polymyxin B; KCS = keratoconjunctivitis sicca; PDS = polydioxanone suture; STT = Schirmer tear test

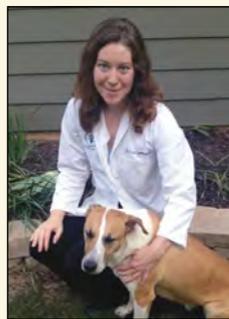
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Elizabeth Barfield Laminack, DVM, practices at Companion Animal Hospital in Athens, Georgia. She received her DVM from University of Georgia and her undergraduate degree in biology from Reinhardt University. Dr. Laminack continues to study small animal ophthalmology at the UGA Veterinary Teaching

Hospital and recently presented an abstract on canine glaucoma at the Association for Research in Vision and Ophthalmology (ARVO) Annual Meeting. She wishes to thank Drs. Denise Weaver and Troy Pickrel and the practice team of Companion Animal Hospital for their support of her ophthalmic pursuits; she also extends gratitude to her mentors, Drs. Anthony Moore and Kate Myrna of UGA-VTH.

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