Fundic Exams
How to get a better look

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Fundoscopic examination remains a critical component of comprehensive ophthalmic evaluation in veterinary medicine, yet many practitioners struggle to obtain adequate visualization of posterior segment structures. Successful fundic examination requires optimal conditions including patience, a dimly lit environment, calm patient positioning at eye level, and appropriate mydriasis using tropicamide rather than atropine. Implementation of the Fear Free protocol significantly enhances examination success, utilizing gabapentin (10-30 mg/kg) and trazadone (4-8 mg/kg) administered both the night before and two hours prior to examination.

Veterinarians have two primary fundoscopic techniques at their disposal, each with distinct advantages and limitations. Direct ophthalmoscopy provides superior magnification (15-17X) with an upright, anatomically correct image, lower equipment costs, and shorter learning curve. However, this technique offers limited field of view, requires close proximity to the patient's face, restricts peripheral visualization, and provides poor visualization through opaque media. Indirect ophthalmoscopy, conversely, utilizes condensing lenses (20D, 28D, or 2.2 Panretinal) with either monocular light sources or binocular indirect ophthalmoscope headsets. Premium options include the Heine system with superior optics, while the ARCLight Holo offers budget-friendly portability with solar charging capabilities. Indirect ophthalmoscopy provides stereoscopic depth perception with binocular systems, maintains safe distance from aggressive patients, penetrates opaque media more effectively, and delivers expansive 50-70 degree fields of view. Disadvantages include higher equipment costs for binocular systems, inverted and reversed image orientation, and reduced detail compared to direct examination. Common technical errors include improper lens positioning—holding the condensing lens too far from the patient or at incorrect angles.

Understanding normal fundic anatomy and physiologic variations is essential for accurate pathology recognition. Significant anatomic differences exist between canine and feline patients regarding tapetal configuration, optic disc appearance (myelinated in dogs versus non-myelinated in cats), and retinal vascular patterns. Normal variations include tigroid fundus appearance in blue-eyed or merle-coated dogs reflecting reduced pigmentation, tapetal absence or poor development in color-dilute and small breeds respectively, variable tapetal-nontapetal borders between long-haired and short-haired breeds, and species-specific differences in retinal vascular anatomy.

Pathologic fundic lesions require systematic characterization. Chorioretinitis presents with poorly demarcated borders, blurred detail, hyporeflective gray-pink tapetal changes, and gray-white nontapetal discoloration, while inactive chorioretinopathy demonstrates sharply defined margins, distinct detail, hyperreflective tapetum with pigmented borders, and depigmented nontapetal

regions with pigment clumping. Vascular abnormalities include hemorrhage, narrowing associated with anemia or retinal degeneration, increased caliber and tortuosity with hypertension or hyperviscosity, segmentation from hypertension or inflammation, and lipemic appearance. Additional significant findings include perivascular cuffing, retinal detachment ranging from subtle blurring to bullous elevation, cellular infiltrates suggesting neoplasia, infection or inflammation, retinal atrophy with increased tapetal reflectivity, Decreased reflectivity is a result of retinal thickening from edema or cellular infiltration. Other possible fundic findings include vitreal debris or hemorrhage, and optic nerve pathology including edema, hyperemia, hemorrhage, coloboma, and atrophy. Systematic fundic examination technique and recognition of normal variations enable accurate diagnosis of vision-threatening posterior segment disease and ensures a better surveillance system for systemic disease when routinely performed on sick patients.