*Small Optic Nerve*
*Large Optic Nerve*
Choroid Thinning
Choroid Thickening
Collie Eye Anomaly
Tapetum Changes Secondary to Choroid Disease
Retinal Hemorrhage
Attenuation of Retinal Vasculature
*Enlarged Retinal Vasculature*
*Retinal Detachment - fundus effects*
*Retinal Detachment*
Retinal Dysplasia
Retinal Inflammation
*Hyporeflectivity of sensory retina*
*Hyperreflectivity with dark spots*
Hyperreflectivity of sensory retina
Sensory Retina
Retinal Pigmented Epithelium
Choroid- Pigment
Choroid- Tapetum
Sclera
*Lesions of Glaucoma*

- Corneal edema
- Scleral and conjunctival hyperemia
- Dilated non-responsive pupil (iris paralysis)
- Optic Nerve Cupping
- Irreversible vision loss

- Retinal Atrophy - esp of inner retina or ganglion cell layer
- Buphthalmia, corneal scarring (hallmark of chronic glaucoma)
Secondary closed-angle Glaucoma

Lens Luxation; pupillary block, PAS

Intumescent lens; pupillary block, PAS

Intraocular Neoplasia; PAS

Other causes:
* Anterior lens luxation; pupillary block, PAS
Posterior synechiae (iris bombe); pupillary block, PAS
Penetrating wound → anterior chamber collapse; PAS

*Anterior Uveitis; PAS
Secondary open-angle glaucoma

Anterior uveitis  Anterior uveitis  Hyphema

Glaucoma due to blockage of iridocorneal angle by cells; also neoplasia
Primary Glaucoma

Normal

Glaucoma
Lens Displacement Secondary to Uveitis
Primary Hereditary Lens Displacement
Hypermature Cataract
Immature Cataract
Incipient Cataract
*Metastatic Intraocular Neoplasia*
Feline Lymphoma
*Feline Uveal Melanoma*

Iris color change, secondary glaucoma
Malignant, mets to lungs and liver
Canine Ciliary Body
adenoma/carcinoma
*Uveal Melanoma*
VKH-like Syndrome
Canine Adenovirus-1
*Lens-induced Uveitis*

Hypersensitivity reaction to lens proteins

Phacotoxic/phagolytic: hypermature
Cataract; mild
lymphocytic, plasmacytic

Phacoclastic: lens rupture or laceration, severe; Tx by removing lens
Disruption of ocular-blood barrier

Aqueous Flare  Fibrin  Hypopyon

Keratic Precipitates  Hyphema
Anterior Uveitis - clinical signs

- Pain
- Scleral and conjunctival hyperemia
- Iris hyperemia
- Iris Swelling
- Corneal edema
- Miosis
- Poor response to Topical mydriatic
Iris Melanosis
Iris Cysts
Iris Atrophy
*Corneal Ulcer*

- Equine
- Bovine
- Ovine
- Feline
- Canine
*Refractory Indolent Epithelial Ulcer*
**Ulcerative Keratitis**

Sequence: 1) epithelial loss (trauma, desiccation, primary bacterial or viral infection, rarely corneal degeneration) → 2) stromal loss that indicates microbial infection with varying degrees of necrosis and suppuration → 3) descemetocele (corneal ulcer to depth of descemet’s membrane) → 4) perforation with synechia: iris tissue and fibrin within the corneal wound
Eosinophilic Keratitis
*Corneal Sequestrum*
*Chronic Superficial Keratitis

German Shepherd Pannus
Corneal Endothelial Degeneration
*Metabolic corneal infiltrate - lipid or calcium

Degeneration

Hyperlipidemia

Dystrophy
Fibrosis
Pigmentation
Inflammatory Cell Infiltrate
Corneal Vascularization

Superficial vessels from conjunctival vessels; cross limbus; dry eye common cause

Deep vessels from episcleral vessels; don’t cross limbus; uveitis common cause
Corneal Edema

Epithelial or endothelial damage or cell loss
*Keratoconjunctivitis Sicca (KCS)*

Common in certain purebreed dogs; presumed immune-mediated destruction of lacrimal tissue; chronic atrophy and fibrosis of gland; loss of aqueous portion of protective tear film leading to corneal and conjunctival irritation.
Dacryocystitis

Inflammation of nasolacrimal draining. Generally suppurative inflammation with secondary bacterial or fungal infection from extension of conjunctival inflammation, foreign body, or nasal cavity disease (neoplasia). Seen as purulent conjunctival discharge.
Imperforate Lower Puncta

Dogs: usually lower puncta, leads to epiphora (excessive tearing).
Nictitans Gland Neoplasia

Feline: Lymphoma, SCC, fibrosarcoma
Canine: adenocarcinoma
*Bovine, Equine: SCC; common!
*Nictitans Gland Prolapse
*Episcleral melanocytoma
*Scleritis/episcleritis*

Simple diffuse episcleritis
Hyperemic, engorged episcleral and conjunctival vessels; often with perilimbal corneal edema

Nodular granulomatous episclerokeratitis
Nodule on temporal corneoscleral junction, +/- nictans, eyelids, iris (rare)
Benign, responds to topical or systemic steroids
Immature fibroblasts, reticulum cell formation
Collies predisposed
**Conjunctival Neoplasia**

*Squamous cell carcinoma: common in horses, cattle
Angiosarcoma: horses- malignant aggressive neoplasm of endothelial cells
Lymphoma: uncommon; horses, cats, dogs
Hemangiomas: uncommon; dogs
Lymphoma, SCC, melanoma: uncommon; cats
*Conjunctivitis*

Conjunctival responses to injury
Hyperemia, chemosis, ocular discharge, follicle formation
Follicle Formation
Chemosis
Ocular Discharge

Serous: reflex secretion from lacrimal tissues, nictitans gland, and accessory lacrimal glands; aqueous tears for protection, lubrication, and Wolfring

Mucoid: from goblet cells of conjunctiva and glands of Henle; retains tear film on cornea

Purulent: inflammatory cells in tear film
Conjunctival hyperemia

Feature of conjunctival and intraocular inflammation; deeper scleral vessel hyperemia indicative of intraocular disease.
*Equine Sarcoid*

Predilection site around eyes thought to be insect transmission of oncogenic bovine papilloma virus; fibroblast origin. Horses also commonly get squamous cell carcinoma; risk factors being white around eyes, UV light exposure.
**Bovine SCC**

COMMON
Risk factors: old animal, lack of pigment around eye, UV light exposure
Eyelid Neoplasia in Cats

Malignant:
- Squamous cell carcinoma
- Fibrosarcoma
- Basal Cell tumor

Benign:
- Mast Cell Tumor
- Apocrine gland adenoma
*Feline Eyelid Squamous Cell Carcinoma

Usually malignant with local invasion and destruction of tissue. Risk factor- white cat.
Canine Eyelid Papilloma
*Canine Eyelid Melanoma*
*Canine Miebomian Gland adenoma*
Blepharitis

Inflammation of eyelid

Etiologies
Bacterial: in dogs usually Staph
Viral: avian- pox virus
Mycotic: dermatophytes
Parasitic: canine- Demodex, Sarcoptes
Cats- Notoedres, Cuturebra
Equine- Habronema (granulation; uncommon dt Ivermectin)
Allergic: atopy, autoimmune (pemphigus, SLE, DLE, etc.), insect bites, drug hypersensitivity, eosinophilic blepharoconjunctivitis (cats)
*Chalazion*
*Internal Hordeolum, meibomitis

Suppurative inflammation (neutrophils) of meibomian glands, usually due to Staph infection, assoc with generalized dermatoses. May appear as inflammatory cell infiltrate perpendicular to lid margins.
*Entropion
*Macropalpebral fissure

Brachycephalic breeds, predisposes to lagophthalmos (inability to close eyelids completely and to corneal ulceration)
Maldevelopment of filtration angle

Goniodysgenesis, pectinate ligament dysplasia
Persistent hyaloid artery
Persistent pupillary membranes
Microphthalmia