VET 433A The Orbit

Anatomy

- The rim of the orbit
  - Frontal bone
  - Lacrimal bone
  - Zygomatic bone
  - Orbital ligament
- The medial wall and roof of the orbit is BONY
  - Orbital portion of the frontal bone
  - Orbital wing of the sphenoid complex
  - Lacrimal bone
- The lateral wall and floor of the orbit is SOFT TISSUE
  - Masseter muscle
  - Pterygoid muscle
  - Temporal muscle
  - Zygomatic salivary gland
- Extraocular muscles (globe mobility and protection
  - Four recti: Dorsal, ventral, medial, lateral
  - Two obliques: Dorsal and ventral
  - Retractor bulbi
- Cranial nerve innervation
  - CN III: Dorsal, ventral, and medial recti, ventral oblique
  - CN IV: Dorsal oblique
  - CN VI: Retractor bulbi and lateral rectus

Eye removal

- Evisceration: Remove globe contents leaving the corneoscleral shell intact
- Enucleation: Removal of the globe, eyelid margins, 3rd eyelid and conjunctiva
- Exenteration: Removal of the globs, eyelid margins, 3rd eyelid, conjunctiva, and all **orbital contents**

What are the indications for globe removal? A blind and painful globe!

General signs of orbital disease

- Exophthalmos: rostral displacement of the globe from the orbit
  - Wider palpebral fissure
  - Third eyelid protrusion
  - Indicative of space occupying lesion in orbit
  - Verify by looking above

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- Enophthalmos: Caudal displacement of the globe into the orbit
    - Narrow palpebral fissure
    - Third eyelid protrusion common
    - Horner's syndrome, loss of retrobulbar fat, senile, chronic, inflammation, starvation
    - Acquired globe shrinkage
    - Developmentally small globe
- Strabismus: Involuntary, fixed deviation of the visual axis in one or both eyes
    - Deviation of visual axis (esotropia)
    - Divergent strabismus (exotropia)
    - Space occupying orbital lesion, extraocular muscle rupture
    - Neurogenic lesions (CN III, IV, VI)
    - Hydrocephalus

Signs of orbital neoplasia

- Slowly progressive exophthalmos
- Relatively painless
- No heat or swelling
- Strabismus
- Usually unilateral
- Third eyelid protrusion
- Decreased retropulsion
- Systemically well
- Usually older patients (~10 years)

Treatment

- Orbitotomy
- Exenteration
- Radiation

Retrobulbar Cellulitis/Abscess

- Inflammatory process behind globe
    - Causes
        - Penetrating wounds
        - Foreign bodies
        - Spread from adjacent structures (sinuses, dental disease, hematogenous spread from distant site)
    - Signs

        - Acute onset exophthalmos
        - Painful to open mouth or palpate head
        - Decreased appetite
        - Usually unilateral
        - Periocular inflammation
        - 3rd eyelid protrusion
        - Decreased retropulsion with pain
        - Often systemically ill, febrile
        - Leukocytosis
        - Swelling behind last molar
    - Diagnosis
        - Clinical signs
        - Rule out orbital neoplasia
        - Ocular ultrasound
        - Advanced imaging
    - Treatment
        - Broad-spectrum antibiotics (amoxicillin-clavulanate)
        - IV / Oral
        - Systemic anti-inflammatory (NSAID/Steroid)
        - IV Fluids
        - Topical Lubrication
        - Treat Ulcer if present
        - E-collar
        - Exenteration if globe is blind and painful

Proptosis

- Forward displacement and entrapment of globe outside orbit by lids
- Cause: Blunt trauma or bite wound
- Brachycephalic breeds are predisposed due to their shallow orbits
- This causes a variable degree of damage to the extraocular muscles, optic nerve, and internal ophthalmic artery
- Prognosis
    - Good: Dog, brachycephalic, no facial fx
    - Poor: Cat, mesocephalic, dolichocephalic, facial fx
- Treatment
    - Replace globe or enucleate if severe

Extraocular myositis

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- General facts
  - Relatively rare
  - Autoimmune disease
  - Common in young golden retrievers
- Signs
  - Rapid onset, bilateral exophthalmos
  - Painless
  - Usually no periocular heat or swelling
- Diagnosis
  - Signalment and history
  - Clinical signs
  - Response to treatment
  - US/CT/MRI
  - Muscle biopsy
- Treatment
  - Oral immunosuppressives
    - Prednisone
    - Azathioprine