University of Florida
Cat
Horse
- bones
- EOM in fascial slings
  - Periorbita: orbital septum to tarsal plate
  - Periosteum of optic canal to optic nerve dura
  - Tenon’s capsule to dura
- masticatory and pterygoid muscles
- globe and optic nerve
- salivary and lacrimal glands
Clinical Signs of Orbital Disease:

- **Exophthalmos**
  Normal sized globe that is more prominent or is protruding from orbit.
- Distinguish from buphthalmos
- May be "normal" for brachycephalics
Enophthalmos - globe sunken or receded into orbit, may be transient (related to dehydration or debilitation) or permanent (loss of retrobulbar contents).
Clinical Signs of Orbital Disease

- Strabismus
- Chemosis
- Protrusion of the TE
- Blepharedema
- Exposure keratitis
- **Periorbital swelling**
- **Pain on opening the mouth.** Exophthalmos with pain upon attempting to open the mouth usually indicates a retrobulbar abscess or cellulitis.
- **Visual impairment**
External Ophthalmoplegia

- impaired eye movements
- 1. May be related to neurological dysfunction
- 2. Lateral rectus innervated by CN VI and superior oblique by CN IV
- 3. Inferior oblique and remaining rectus muscles innervated by CN III
Tooth Root Abscess

“Ernie”
Diagnostic Techniques in Orbital Disease

- B. CBC and chemistry profile
- C. Cytology and culture of orbital aspirates. (Ultrasound guided)
Retropulsion for orbital signs
Ultrasonography
Ultrasonography

Normal

Optic nerve tumor
Retinal Detachment

Lens on retinal surface
CT and MRI
Ultrasonography
MRI and CT

US

Abscess

Tumor

CT
Radiographic evaluation

1. Survey radiography (bone changes, foreign bodies).

2. Orbital angiography, contrast orbitography, sialograms.
D. Biopsy

- Ultrasound guided or blind (risky) biopsy through roof of mouth behind last molar or 1cm behind lateral canthal ligament.
  - Beware of maxillary artery.
  - Incise mucosa with blade then use blunt hemostats to enter retrobulbar space.
- Transconjunctival - +/- US guided to obtain piece of dorsal rectus muscle
Orbital biopsy or abscess drainage
Enophthalmos: recession of the globe in the orbit

- A. reduced orbital contents
  Resorption of orbital fat, muscle atrophy, scar tissue formation after trauma, muscle degeneration associated with recurrent myositis, or neoplasia
- B. lack of muscle tone
  Horner's syndrome
"Enophthalmos" due to reduction in globe size

- 1. Microphthalmia
- 2. Phthisis bulbi – globe atrophy
Microphthalmos: Australian Shepherd 216616
Medial Canthal Pocket Syndrome.
- Labradors, Dobermans and Irish Setters are normally somewhat enophthalmic due to large orbital space relative to globe size.
- The medial canthus forms a "pocket" to collect dust and debris to result in a persistent / recurrent medial canthal conjunctivitis.

Dirt!! Poor Katie!
Retrobulbar Abscess and Orbital cellulitis

a. Etiology

1) Infection secondary to wounds or foreign bodies lodged in the palate or orbit
2) Extension of infections from oral, nasal / sinus, or cranial cavities
   - periodontal disease/ tooth root abscess
   - (includes abscess of salivary and lacrimal glands.
3) Idiopathic - common
4) Larvae of migrating parasites
b. Signs

- 1) Acute onset
- 2) Fever
- 3) Mandibular lymphadenopathy
- 4) Usually unilateral
- 5) Reddened, discolored swelling posterior to the last upper molar may be seen ipsilaterally
- 6) Pain on jaw manipulation and retropulsion of eye
7) Elevated WBC count
8) Exophthalmos (protrusion of the TE, exposure keratitis, swelling of the lids)
9) Corneal perforation, optic neuritis and optic atrophy with visual impairment may occur.

c. Diagnosis
1) Clinical signs and history, fever, pain, unilateral
2) Must differentiate from retrobulbar tumors and lid abscesses -- US exam
d. Treatment:

- 1) Surgically establish drainage into the mouth posterior to the last upper molar
  
  - ***Culture and sensitivity tests.

- 2) Systemic antibiotics for 4-8 weeks

- 3) Supportive care for the globe and cornea
  (warm compresses, topical antibiotic ointments, artificial tears, 3rd eyelid flaps, etc.)

- 4) If reoccurs search for neoplasia, retained f.b., tooth root disease etc.....
Orbital Neoplasia
- Over 80% of orbital tumors are malignant with poor prognosis.
- Usually unilateral except lymphosarcoma, granulomatous meningoencephalitis.
- Suspect neoplasia for unilateral exophthalmos in older dogs and cats.
- Slow onset of exophthalmos
- Not usually painful around the mouth
- No systemic signs early
Optic nerve meningioma
Treatment – removal and prognosis depend upon tumor type and extent –

a. surgical removal
b. adjunctive chemotherapy, immunotherapy, radiation

SCC
- Exophthalmos from chiasmal Tumor
Proptosis: Trauma to head or orbit.

Brachycephalic breeds are at higher risk.

1) Evaluation:

- Condition of the EOM
- Integrity of the globe and its internal structures (check and treat for ulcers, hyphema and uveitis)
- Evaluate pupillary reflexes
- Pupils dilated - guarded to unfavorable prognosis
- Pupils constricted or reactive to light - favorable prognosis
- Evaluate for other traumatic injuries: skull fractures thoracic trauma
What is the prognosis for vision?: 1. good 2. no chance

Why? 1. hyphema 2. Muscle damage 3. stretched nerve 4. ruptured globe 5. 2 and 3
Proptosed one eye and blind in other!!
8 wk old Peke pup
2) Treatment
- Keep the eye moist. Gently clean with sterile saline flushes.
- Under general anesthesia replace the eye, performing canthotomy if necessary.
- Preplace several small tarsorrhaphy sutures and gently push globe into orbit.
- Temporary tarsorrhaphy for 1-3 weeks (until lid tension is minimal).
- Topical and systemic antibiotics
- Systemic anti-inflammatory drugs.
3) Sequelae: blindness

- Traumatic strabismus (usually esotropia from rupture of medial rectus), enophthalmos, exophthalmos, KCS, phthisis bulbi, glaucoma
4) Prognosis: Depends on amount of trauma, time since injury. Better prognosis in brachycephalic breeds, intact PLR, normal fundus, visual. Poor in cats and other breeds (due to large amount of trauma required to result in proptosis), or if hyphema, no visible pupil, facial fractures, avulsion > 3 EOM or optic nerve damage is present.

5 yrs after
Acute Masticatory Muscle (eosinophilic) Myositis
- Immune mediated with circulating antibodies against masticatory Type IIM myofibers.
- Most common in German Shepherds. Recurrences frequently observed. Severity variable.

Clinical signs: OU
- 1) Exophthalmos
- 2) Painful to open mouth
- 3) Blindness
- 4) Enophthalmos in chronics

Diagnosis:
- Muscle biopsy: eosinophils
Therapy  AMMM (atrophic form will not respond)

- 1) Systemic corticosteroids: Prednisone 1 mg/kg PO q 12 h for 21 days then slowly taper
- 2) Azathioprine: 2.2 mg/kg PO q 24 h
Extraocular Muscle Myositis

a. etiology: immune mediated against EOM (Type I myofibers), common in 8-10 month old Golden Retrievers
- Also large breed dogs after castration

b. Clinical Signs
- 1) OU (96%)
- 2) non-painful
- 3) chemosis precedes exophthalmos in 81% of cases, usually without TE prolapse
- 4) may have severe ON impingement with optic neuritis +/- blindness
- 5) enophthalmos
- EMG: abnormal in EOM
- MRI/CT helpful
- d. Treatment
  - 1) 54% reoccur, 46% have 2 or more recurrences
  - 2) 72% reoccur if taper steroids in less than 21 days
  - 3) Oral Cyclosporine (5mg/ kg PO q 12 hours then taper) MAY BE treatment of choice as immunohistochemical stains indicate T-lymphocyte response
  - 4) systemic steroids
3 months post treatment
Orbital Foreign Bodies
052929 Ocular Foreign body. Gun pellet.
- Orbital varix: arteriovenous fistula due to trauma.
  - intermittent exophthalmos
Retrobulbar nerve blocks

- Inferotemporal palpebral block
  - 1.5 in 22 G needle
  - 5-10 cc lidocaine
- Eye position is good for corneal surgery
- Less postop pain from enucleation
Evisceration- leave cornea and sclera intact and insert silicone prosthesis.