Presentation: Ophthalmic Emergency

- **Acute Trauma**: Hit-by-car (HBC), fighting, aggressive restraint
  - Forward displacement of globe with entrapment of eyelids behind
    - **Brachycephalics** can proptose with minimal trauma
    - **Dolichocephalics** require severe trauma to proptose
    - See in dogs >>> cats
  - Other signs (depending on degree/type of trauma):
    Fractures (skull, appendicular), neuro deficits (brain trauma), shock, respiratory distress, recumbent

  **Classic case**: Bug-eyed spaniel fell off sofa and his eye popped out
  - or -
  Hit-by-car dog of any type

Differential Dx:
- Buphthalmos 2° to glaucoma
- Exophthalmos 2° to retrobulbar mass, orbital abscess or congenital vascular anomaly

Test of choice:
- Proptosis diagnosis is obvious but…..
  - **Must evaluate patient’s stability for surgery AND prognosis for eye/vision**
    - Physical exam
    - Evaluate for hypovolemic or hemorrhagic shock
    - Suspect pneumothorax, pulmonary contusions? thoracic radiographs
    - Suspect orbital or skull fracture? skull radiographs
  - **Ophthalmic Exam** - Only 20% of proptosis cases regain some functional vision
    - Must assess eye damage & vision
      - **Menace Response**
        - Positive menace = **GOOD** prognostic indicator for vision
      - **Pupillary light reflexes (PLR)**: direct and consensual
        - Resting pupil size does not correlate with prognosis for vision
        - **Positive PLR = GOOD prognostic indicator**
        - **Dilated, unresponsive pupil = POOR prognostic indicator**
          - Optic nerve avulsion likely
      - **Fluorescein stain** - Assess for corneal abrasions & ulceration
      - **Posterior segment** - Often difficult to assess immediately
Rx of choice:
STABILIZE & TREAT LIFE THREATENING INJURIES 1st
  + Lavage eye w/ sterile saline
  + Protect eye w/ topical medications alternating Q 1 hr until eye is treated
    ▪ Bacitracin-Neomycin-Polymyxin [(BNP) without steroid] ophthalmic ointment
    ▪ Sterile lubricant

If vision or globe can be salvaged for cosmetic purposes

- REPOSITION GLOBE IN ORBIT
  Perform ASAP under general anesthesia as soon as patient stable
  ▪ Lateral canthotomy
    ▪ 1-2 cm incision at lateral canthus to widen the palpebral fissure
      ▪ Allows eyelid replacement over globe
  ▪ Replace globe into orbit
    ▪ Lavage globe with sterile saline
    ▪ Apply copious amounts of BNP ophthalmic ointment on eye surface
    ▪ Gently press globe into orbit w/ moist surgical sponge or flat of scalpel handle
    ▪ Close lateral canthotomy
  ▪ Temporary tarsorrhaphy
    ▪ Temporary closure of eyelids over the globe (1-3 weeks)
    ▪ Leave an opening left at medial canthus for application of topical medications
  ▪ Topical medications
    ▪ BNP ophthalmic ointment
    ▪ Atropine (mydriatic-cycloplegic)
      ▪ Prevents persistent miosis and synechia formation
  ▪ 1-2 weeks post-Sx
    ▪ Evaluate vision, tear production, cornea, intraocular pressure, other
  ▪ ENUCLEATION may still be necessary later due to sequelae
    ▪ ie: painful & blind eye (glaucoma, chronic uveitis)

Potential long-term sequelae
  ▪ Blindness, strabismus, glaucoma, phthisis bulbi
  ▪ Corneal sensory deficits, chronic corneal ulceration
  ▪ Keratoconjunctivitis sicca, chronic uveitis
  ▪ Post traumatic ocular sarcoma (cats) (prevent w/ early enucleation)
If globe cannot be salvaged
- **ENUCLEATION**
  - Perform under general anesthesia, once patient is stable
  - Enucleation is indicated with **extensive damage**
    - Globe rupture, severe intraocular hemorrhage (hyphema)
    - Avulsion of 3+ extraocular muscles, optic nerve avulsion
    - Client preference (salvage requires long-term treatment & commitment, cost)

**Post-Surgical Care** (both procedures)
- Perform under general anesthesia, once patient is stable
- Elizabethan collar (prevents self-trauma)
- Systemic broad-spectrum antibiotics (ie: cephalaxin)
- Nonsteroidal anti-inflammatory drugs
  - Dog: carprofen (Rimadyl®), Cat: robenacoxib (Onsior®)
- Analgesics (ie: buprenorphine, tramadol)
- Soft food, warm compresses to alleviate discomfort

**Prognosis:**
**For vision**
Elements of a guarded to good prognosis:
- Mild proptosis, eyes w/ positive direct & consensual PLR
- Positive menace response and vision on initial exam
- Bachycephalics >>>>> cats, dolichocephalics

**For globe salvage**
**Good**: minor to moderate proptosis, avulsion 1 extraocular muscle, +/- minimal hyphema
**Guarded**: moderate proptosis, moderate hyphema, avulsion 2+ extraocular muscles
**Grave**: severe proptosis, extensive tissue damage, avulsion 3+ extraocular muscles, globe rupture, optic nerve avulsion

**Prevention:**
Avoid aggressive handling of exophthalmic dog breeds (brachycephalic)
Prevent reoccurrence: Perform a **permanent medial canthoplasty**