



# Proptosed Eye

Extended Version

## Presentation: OPHTHALMIC EMERGENCY

- **ACUTE TRAUMA:** Hit-by-car (HBC), fighting, aggressive restraint
- Forward displacement of globe w/ entrapment of eyelids behind
  - **Brachycephalics can proptose w/ 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

# Proptosed Eye

Extended Version

## Rx of choice:

### STABILIZE & TREAT LIFE THREATENING INJURIES 1<sup>st</sup>

- + 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)



# Proptosed Eye

Extended Version

## 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: cephalexin)
- 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
- Brachycephalics >>>> cats, dolichocephalics



Cow, ocular lymphosarcoma

### 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**

**Refs:** Slatter, Sm An Surg 3<sup>rd</sup> ed. pp.1483-85, Gelatt, Vet Ophth, 3<sup>rd</sup> ed. pp.520-22, Cote, Clin Vet Advisor, Dog and Cat, 2<sup>nd</sup> ed. pp. 918-19, Merck Vet Manual online: Traumatic proptosis, Images courtesy, Dr. Joel Mills (Dog, traumatic proptosis), Dr. Lisle George (Cow, ocular lymphosarcoma)