MANAGEMENT OF OCULAR EMERGENCIES

ASSESSMENT, STABILIZATION, TREATMENT AND WHEN TO REFER

GENERAL GOALS

- Pain control
- Infection – consider C&S
- Saving vision
- Knowing when to refer
- Setting owner expectations

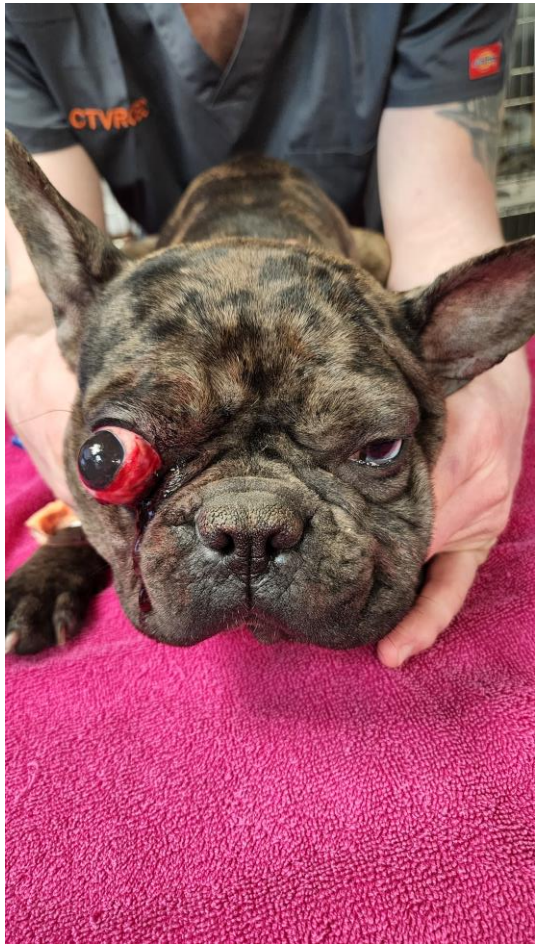
BEFORE YOU REFER

- Preliminary eye exam
- Baseline diagnostics: STT, FDT, Tonometry
- Owner expectations: cost, short and longterm prognosis, at-home care
- Phone consultation?

REMEMBER:

- You are capable of more than you think
- Eyes can be gross and scary, but take a step back and try to think logically

PROPTOSED GLOBE



PROPTOSED GLOBE - CONSIDERATIONS

- How did it happen? HBC, BDLD, dramatic nail trim?

PROPTOSED GLOBE - PROGNOSIS

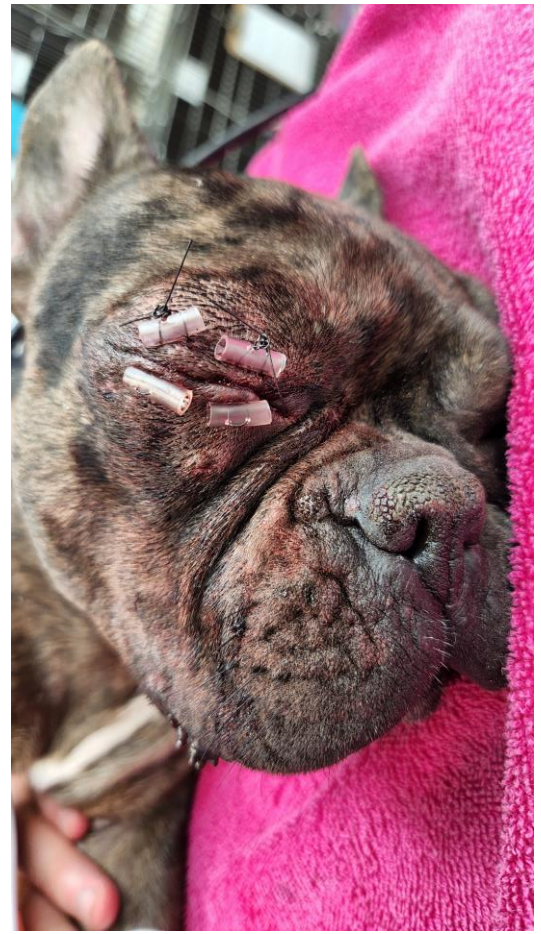
- Before you consider treatment options, is this eye worth saving?
- Breed: brachycephalic is better
- Ruptured/torn extraocular muscles
- Hyphema
- PLR: good if present, absent not necessarily bad
- Fractured orbital bone?

PROPTOSED GLOBE - TREATMENT

- General anesthesia – sedation is not sufficient
- Lateral canthotomy is almost always necessary
- Forceps to grasp upper and lower lid while RVT uses a lubricated scalpel handle to apply downward pressure
- Tarsorrhaphy with stenting for 2 weeks
- Suture canthotomy closed – Vicryl 5-0 is my preference
- Antibiotics, analgesics

PROPTOSED GLOBE - TARRSORHAPHY

- Non-dissolving suture, I typically use Ethilon 3-0
- Old IV line cut into 1cm segments
- 2 should be sufficient and still allow administration of topical medications
- Beware suture touching cornea or stent loosening



PROPTOSED GLOBE - EXPECTATIONS

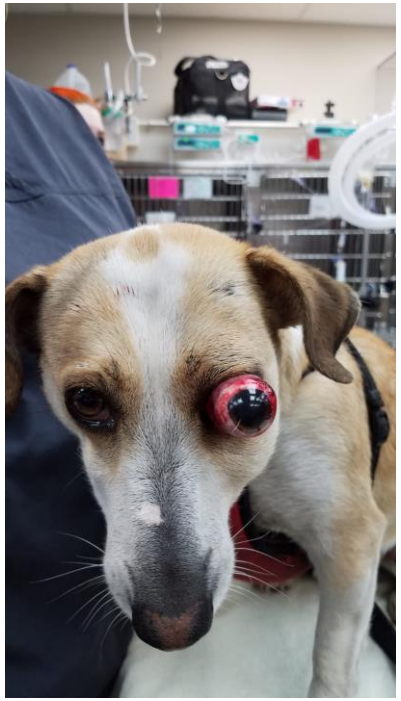
- Medial extraocular muscle is shortest and ruptures first – caution owner on longterm lateral strabismus
- Potential for longterm blindness even if procedure is successful (transected optic nerve)
- Potential need for enucleation once stent is removed if globe fails to stay in orbit

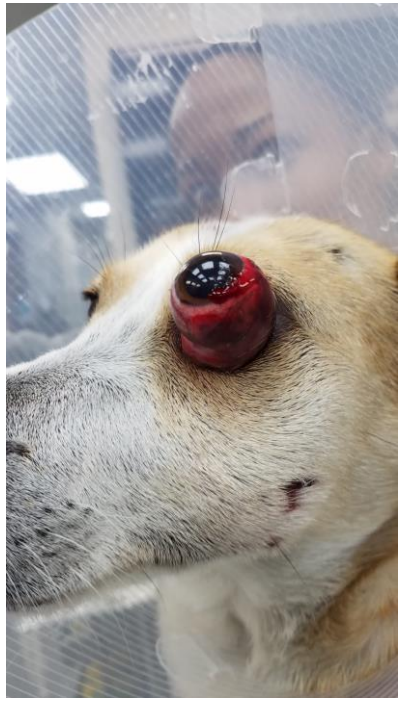
PROPTOSED GLOBE - REFERRAL?

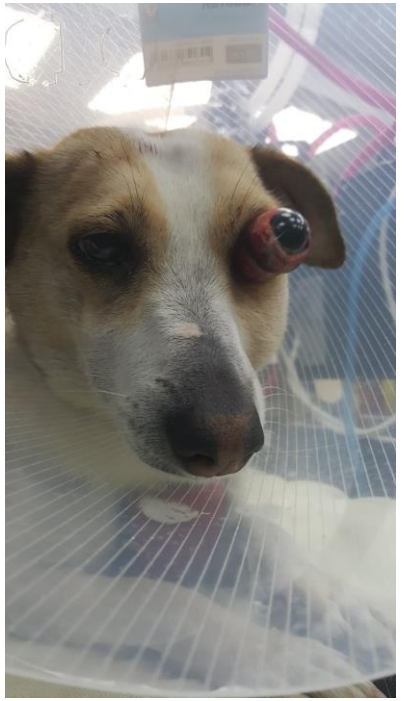
- Not necessary
- Reduction of proptosis best done ASAP before further tissue swelling occurs

PROPTOSED GLOBE - WHAT'S YOUR ASSESSMENT?

- Is this eye worth saving vs. enucleating?







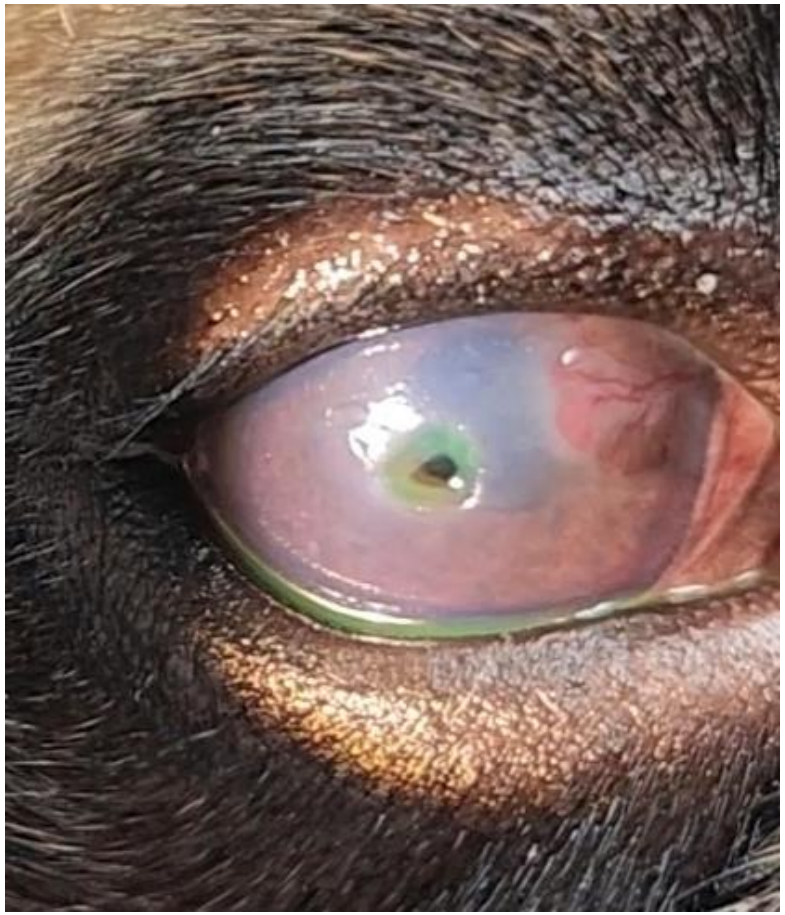
PROPTOSED GLOBE - RESULT

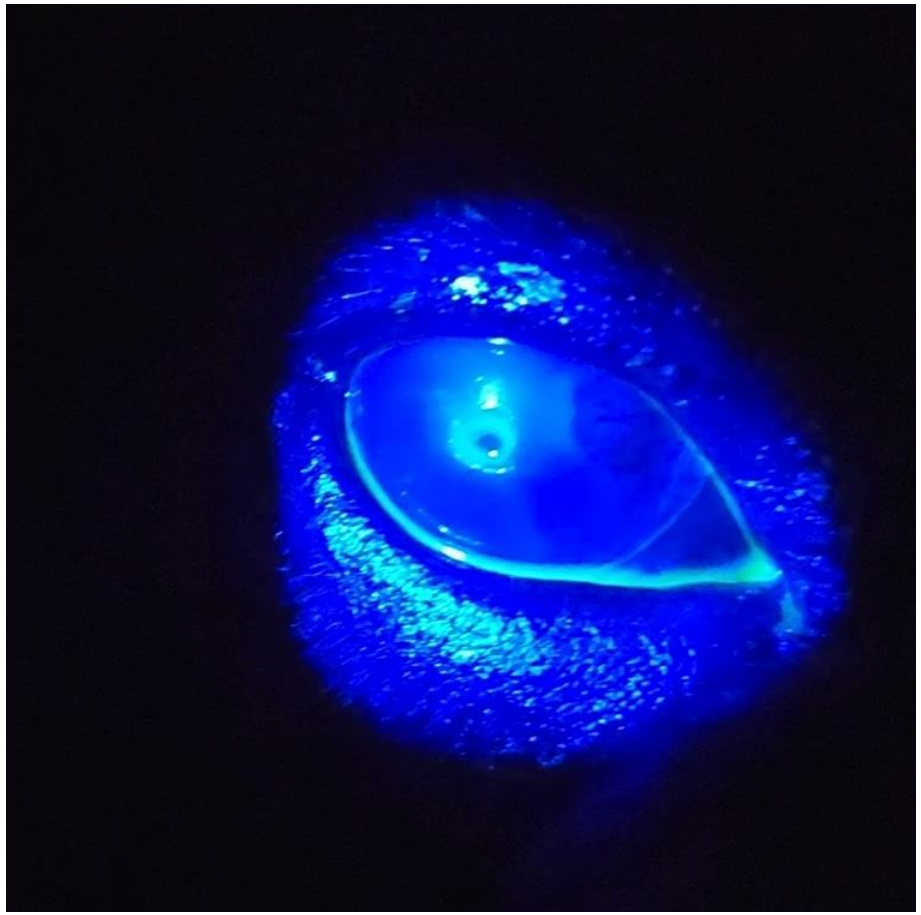
- Enucleation!
- Patient was HBC, sustained an orbital fracture
- Dolichocephalic
- 4 ruptured extraocular muscles
- Marked hyphema

PROPTOSED GLOBE

- Questions??

DESMETOCOELES & RUPTURED GLOBES





DESMETOCOELES & RUPTURES - CONSIDERATIONS

- Breed
- Cause – genetic, trauma
- Surrounding corneal health and location on the cornea
- Timeline – did the eye just rupture or was it 5 days ago?

DESMETOCOELES & RUPTURES - PROGNOSIS

- Before a rupture, prognosis for a visual eye is good
- After a rupture, there is a lot of variance
  - Infection
  - Size of defect
  - Retinal detachment/vision loss
  - Iris plug/need for resection

DESMETOCOELES & RUPTURES - TREATMENT

- Conjunctival graft
- Corneal-conjunctival transposition
- Tissue glue?
- Enucleation

DESMETOCOELES & RUPTURES – CONJUNCTIVAL GRAFT

- A finger-shaped pedicle of bulbar conjunctival tissue is harvested
- The corneal tissue surrounding the defect is gently debrided
- The pedicle is swung over top of the corneal defect and sutured around it using vicryl 8/0 to 10/0
- 3rd eyelid flap?

DESMETOCOELES & RUPTURES – CONJUNCTIVAL GRAFT

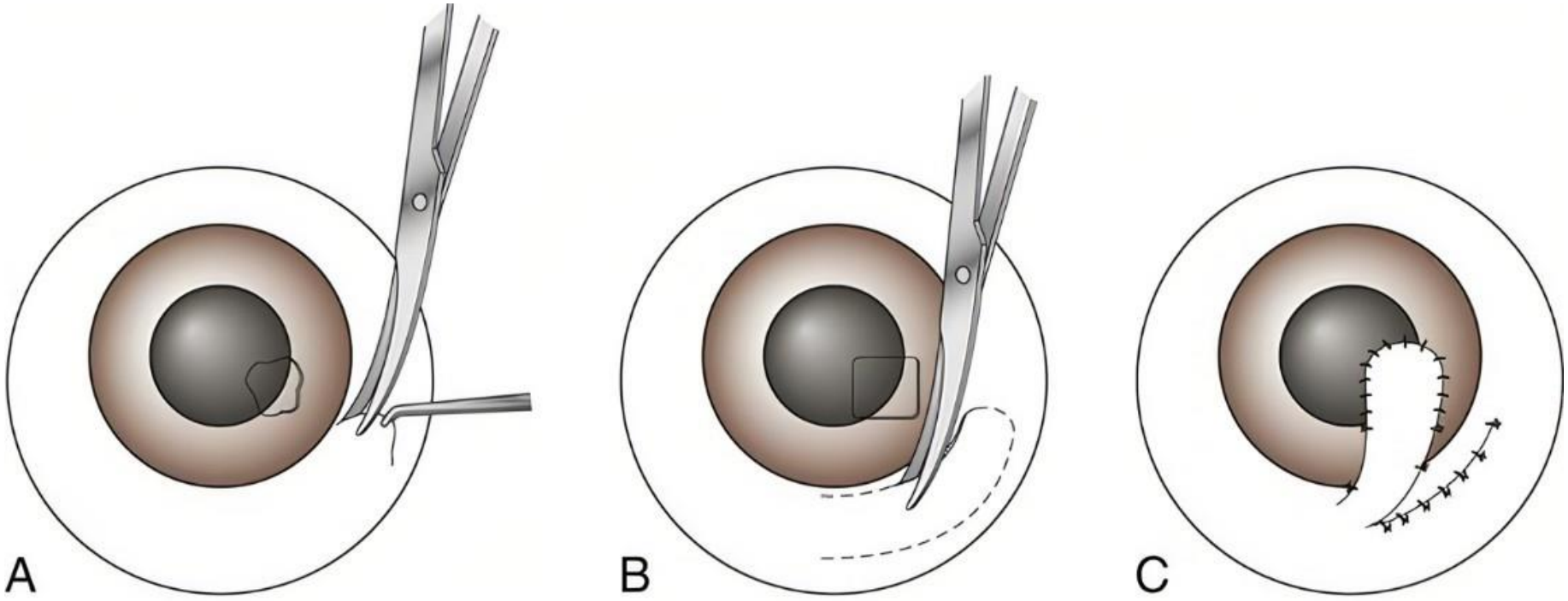


Fig 1 Conjunctival pedicle graft. Surgery of the Eye | Veterian Key

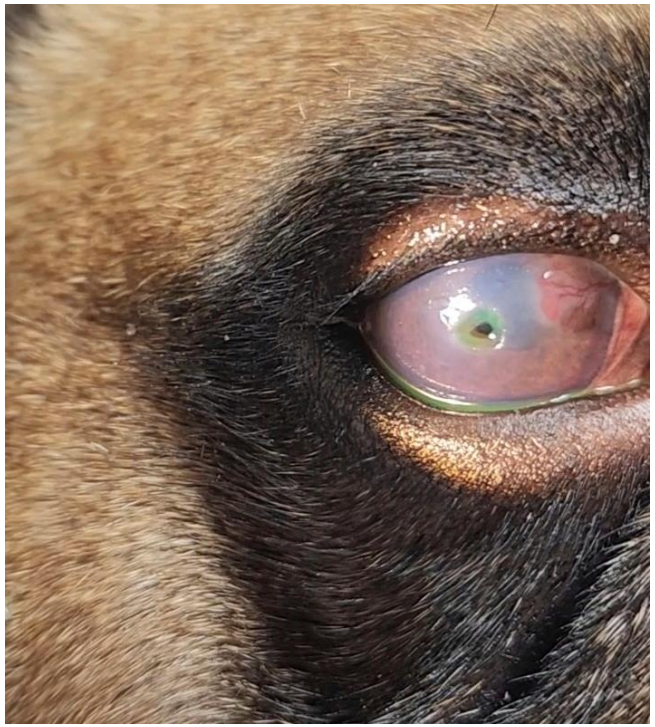
DESMETOCOELES & RUPTURES – GRAFT AFTERCARE

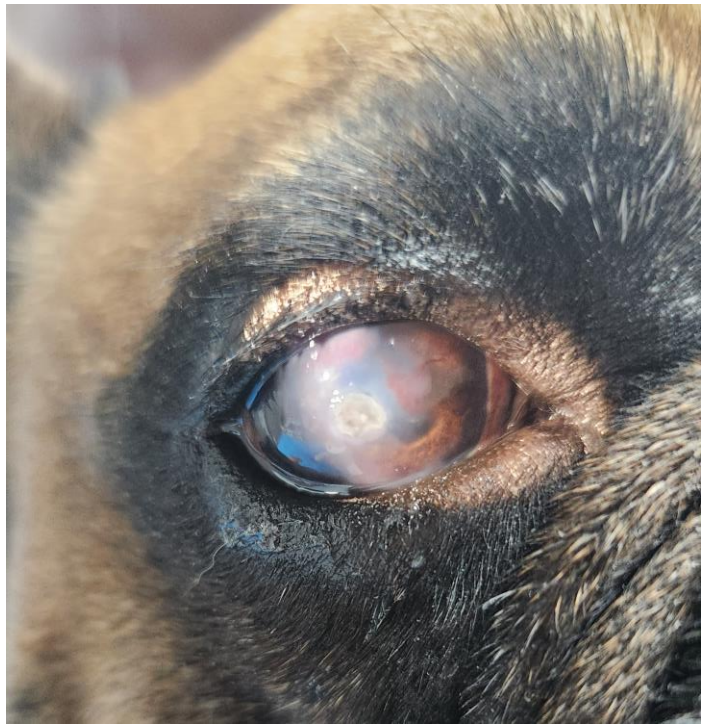
- E-collar for 2-4 weeks
- Antibiotics – fluoroquinolone topically, orally if globe ruptured
- Analgesics – NSAID, tramadol, gabapentin, atropine topically
- 3rd eyelid flap?

DESMETOCOELES & RUPTURES - EXPECTATIONS

- Permanent blindspot and somewhat ugly graft always present
- Development of dark pigment is common and may lead to further vision loss (cyclosporin)
- Prevention in opposite eye if breed-predisposition

DESMETOCOLELES AND RUPTURES – TISSUE ADHESIVE





DESMETOCOELES & RUPTURES – REFERRAL?

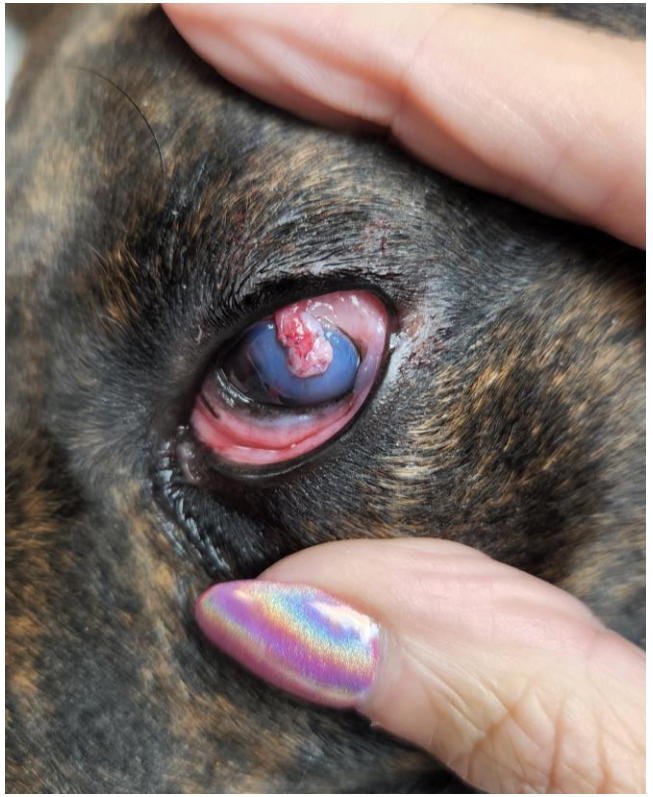
- Yes!
- Magnification required; may get away with loupes, most use an operating microscope
- Specialized instrumentation
- Specialized tissue handling – the cornea

DESMETOCOELES & RUPTURES – WHAT'S YOUR ASSESSMENT?

- Classic puppy vs. cat
- Traumatic cat claw lacerated the cornea
- Iris moved forward to plug the hole and ultimately prolapsed outward

DESMETOCOELES & RUPTURES - RESULT

- Menace/vision intact
- Recent injury
- Near the limbus
- Iris adhesions to cornea gently broken down
- Iris prolapse reduced
- Conjunctival graft performed



DESMETOCOELES & RUPTURES

- Questions??

EYELID LACERATIONS

EYELID LACERATIONS - CONSIDERATIONS

- How and when did it happen? Bite wound, plant material? Fresh vs. old
- Risk of foreign material, infection – C&S?
- Always stain the cornea!

EYELID LACERATIONS - PROGNOSIS

- Very good
- Proper apposition is key for proper spread of tear film, preventing trichiasis

EYELID LACERATIONS - TREATMENT

- Place patient under GA
- Gentle clip and iodine diluted 10:1 for prep (50:1 for ocular surface)
- 2 layer closure using vicryl 5-0
- Figure of 8 suture should not be tight or it will cause buckling
- No suture should make contact with the cornea
- Re-do it if necessary!

EYELID LACERATIONS – FIGURE OF 8 SUTURE

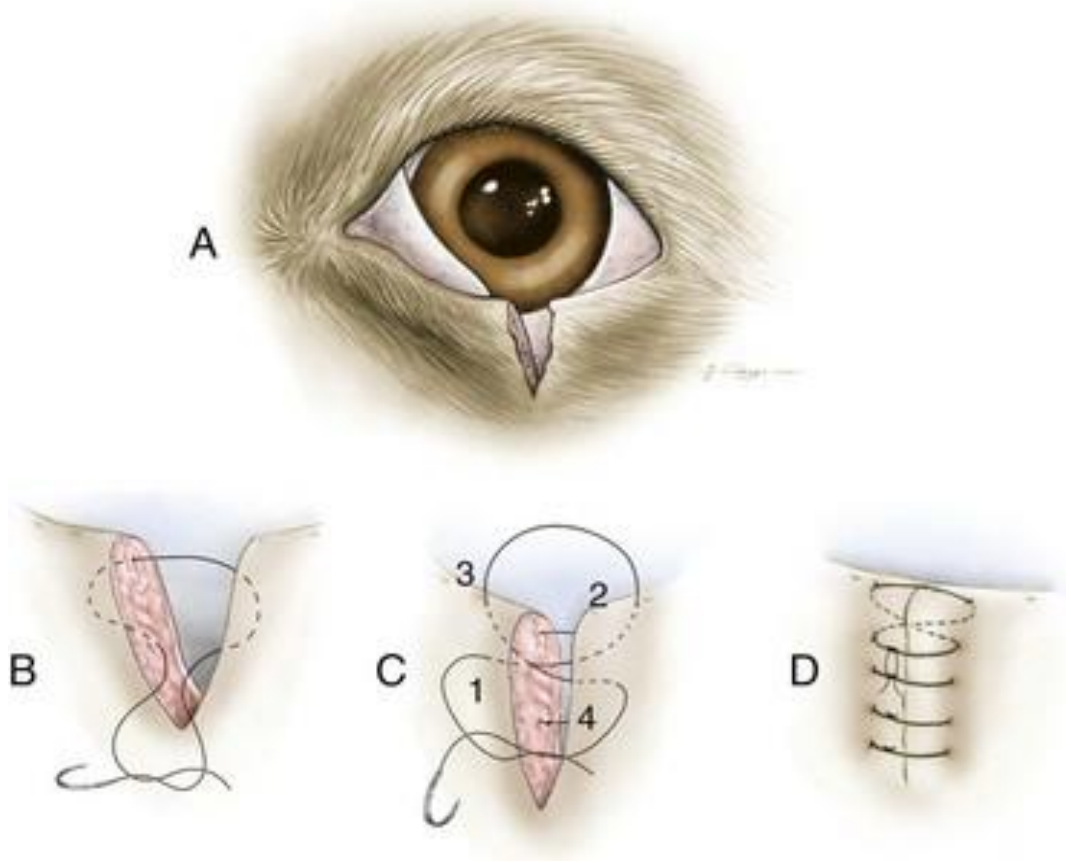


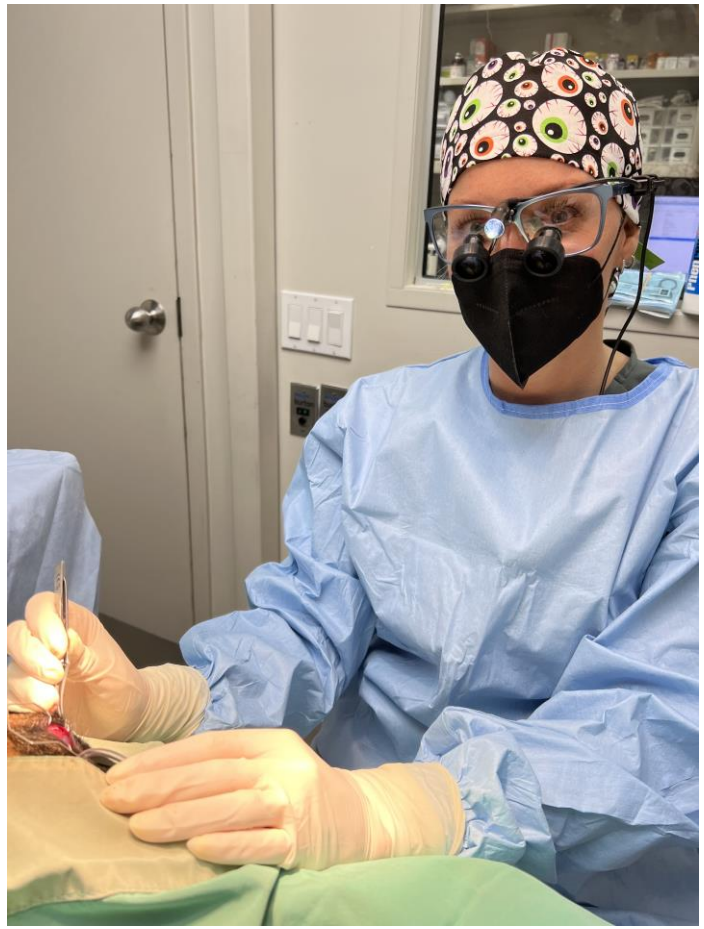
Fig 2 Two-layer closure used to appose eyelid margin. Basic Ophthalmic Surgical Procedures | Veterian Key.

EYELID LACERATIONS - EXPECTATIONS

- Typical surgical risks – infection, dehiscence
- Mild scar

EYELID LACERATIONS – REFERRAL?

- Not necessary but magnification is extremely helpful!



EYELID LACERATIONS – REFERRAL?

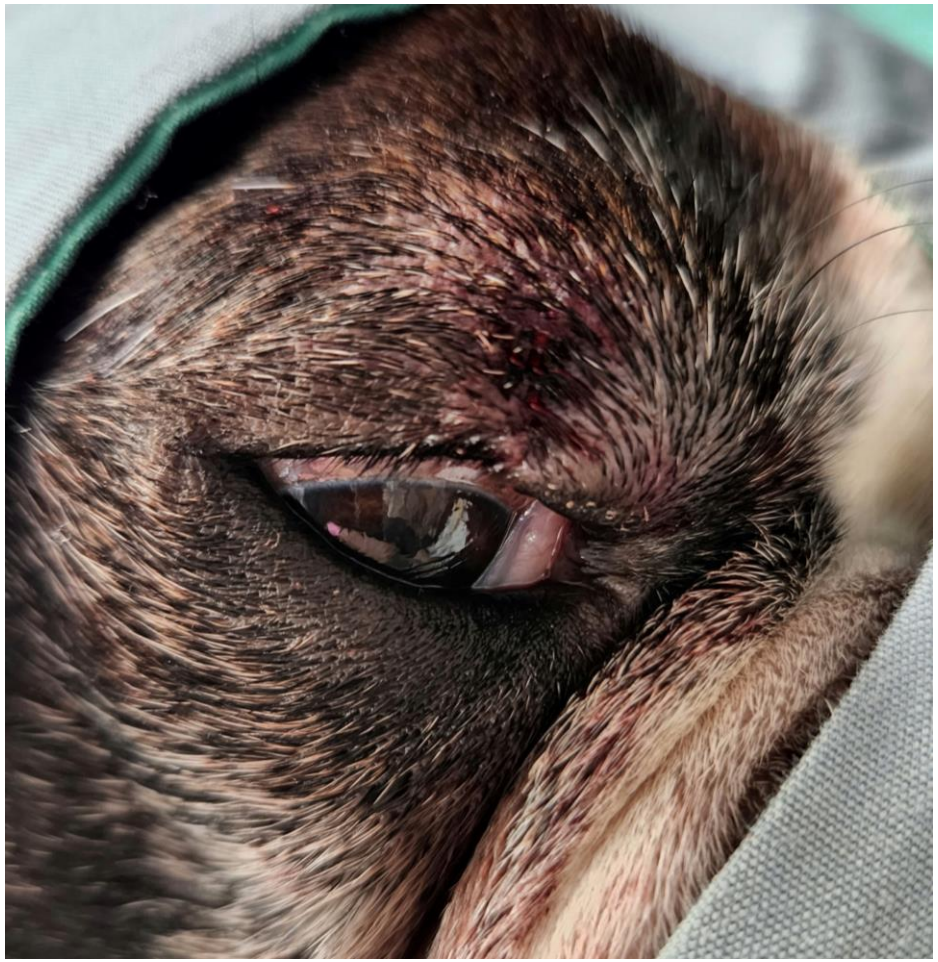
- When you don't have magnification
- Malapposed eyelids leads to trichiasis, poor spread of tear film, corneal irritation and sometimes entropion

EYELID LACERATIONS – WHAT'S YOUR ASSESSMENT?

- Remember this?

EYELID LACERATIONS - RESULT

- Good apposition



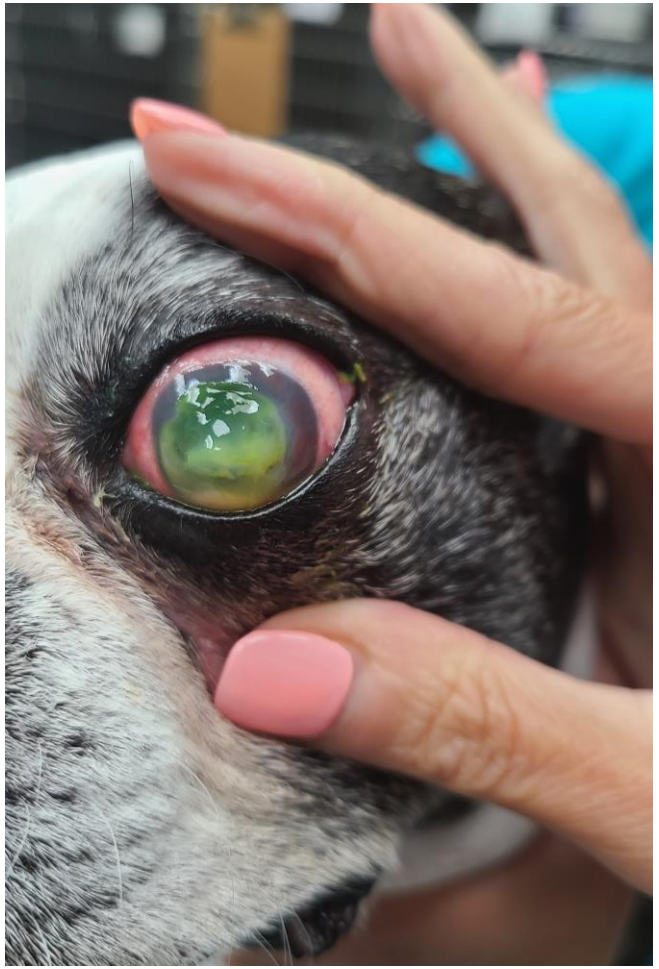
EYELID LACERATIONS

- Questions??

OCULAR EMERGENCIES

- BREAK TIME!

MELTING ULCER



MELTING ULCERS - CONSIDERATIONS

- The stroma is 90% of the corneal matrix and is made up mostly of collagen
- In infected corneal ulcers, tear proteases (MMP, NE) will start to digest the stromal collagen
- We need to stop the protease activity in order to stop the melting

MELTING ULCERS - PROGNOSIS

- Good, if treated quickly and aggressively

MELTING ULCERS - TREATMENT

- Culture! Pseudomonas is a common culprit
- Analgesics – injectable opiates, NSAIDs
- Protease inhibitors
  - EDTA, serum, acetylcysteine – combination works bests, q2hr for the first 48hr
- Antimicrobials:
  - Oral – doxycycline 10mg/kg q12 (inhibits MMP)
  - Tobramycin q2hr for the first 48hr (action against pseudomonas)
  - Fluoroquinolone?

MELTING ULCERS - EXPECTATIONS

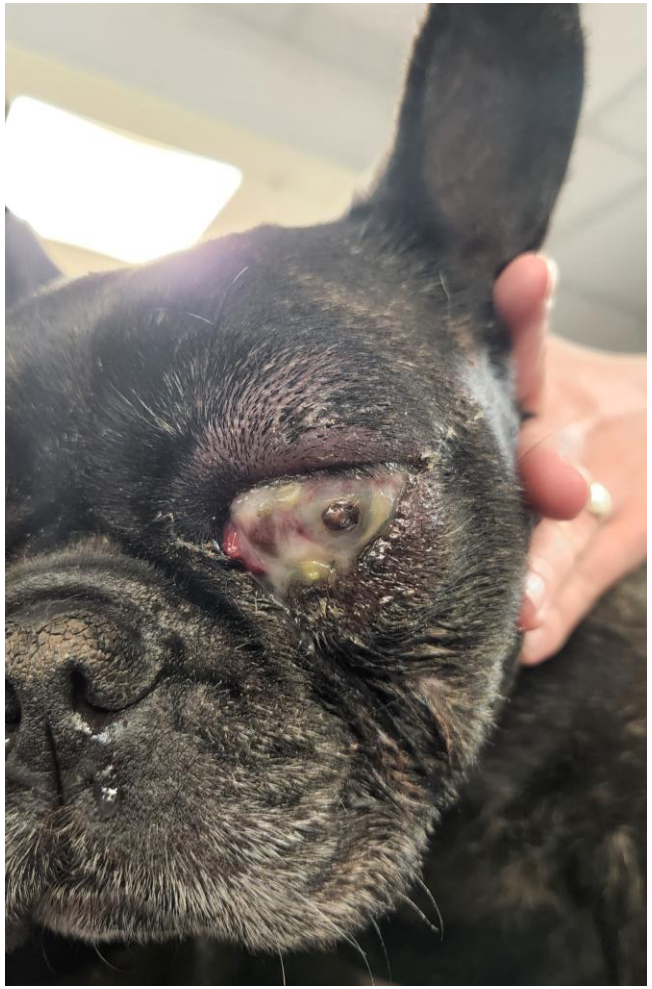
- Full treatment could last several weeks
- Surgical intervention may ultimately be required

MELTING ULCERS – REFERRAL?

- Treatment is intensive and the patient may benefit from being at a 24hr facility for the first 48hr
- There is sometimes a desmetocoele underlying the melt that could ultimately require surgical intervention

MELTING ULCERS – WHAT'S YOUR ASSESSMENT?

- Frenchie
- Keratomalacia
- Desmetocoele



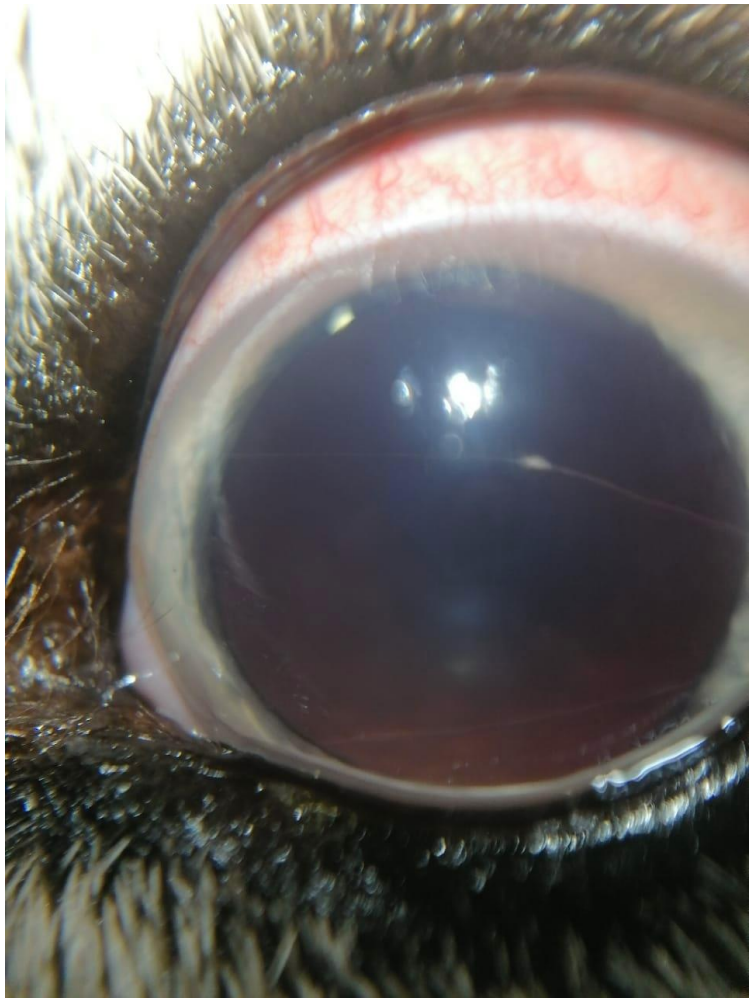
MELTING ULCERS - RESULT

- Enucleation!

MELTING ULCERS

- Questions??

ACUTE GLAUCOMA



ACUTE GLAUCOMA - CONSIDERATIONS

- Primary (inherited) – PCAG (goniodysgenesis)
- Breed (beagles, basset hounds, bostons, cocker spaniels, huskies etc)
- Secondary (non-inherited) – uveitis (cats!), tumours, lens luxations, etc
- Cats are very subtle and we often miss the acute stage

ACUTE GLAUCOMA - PROGNOSIS

- 50% change of regaining sight
- Initial success with primary glaucoma is good; secondary less successful

ACUTE GLAUCOMA - TREATMENT

- Treatment is aimed at saving vision and providing comfort by lowering IOP
- Mannitol Infusion
  - 0.5-1g/kg over 20min, withhold food and water for 4hr, may repeat
  - Caution with renal and cardiac patients
- Prostaglandin Analogs
  - Increased drainage of aqueous
  - Not for cats
  - travatan q5min x 3 doses
- Aqueocentesis
  - But what about rebound of increased IOP?
- Carbonic anhydrase inhibitors
  - decrease production of aqueous

ACUTE GLAUCOMA - EXPECTATIONS

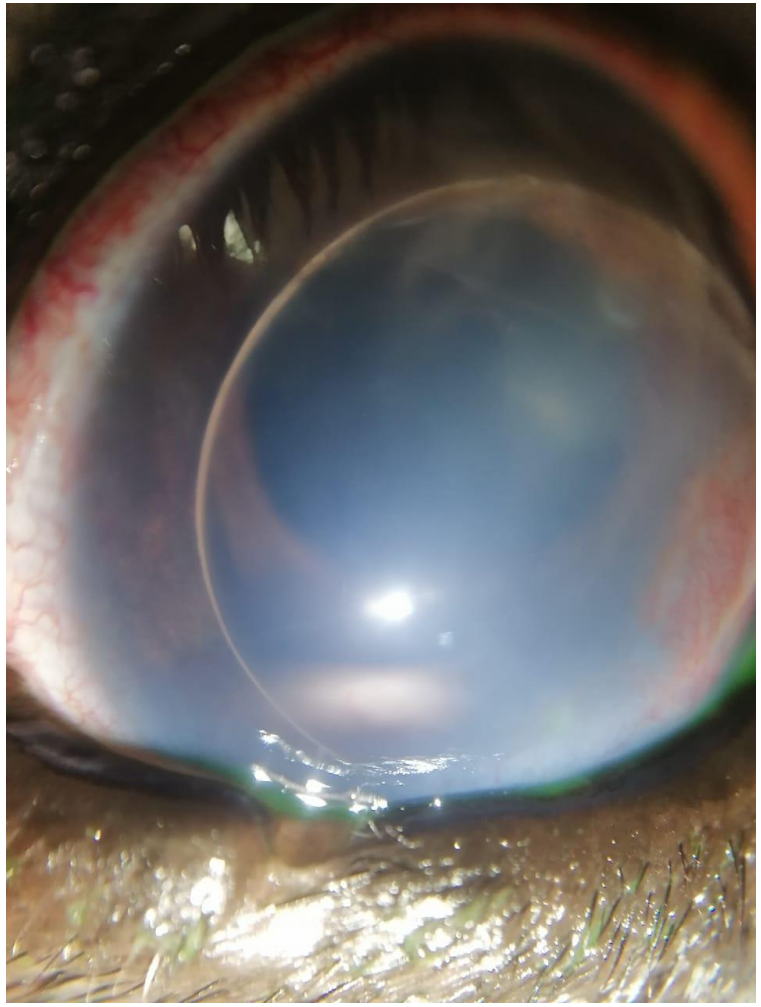
- Patient will ultimately become refractory to medical treatment
- Set up the expectation early on that eventual blindness and pain will necessitate enucleation

ACUTE GLAUCOMA – REFERRAL?

- Gonioscopy
- Ocular Ultrasound
- Ciliary body ablation with gentamicin
- Shunt placement or laser surgery (cyclophotocoagulation)

ACUTE GLAUCOMA – WHAT'S YOUR ASSESSMENT?

- Anterior lens luxation
- Bloackage of the drainage angle
- Blind



ACUTE GLAUCOMA - RESULT

- These patients often do not respond to medical management
- Lendectomy may be performed – must use a prostaglandin analog OU moving forward
- Enucleation + prostaglandin analog in the contralateral eye
- *beware of reflex mydriasis if dose is missed!

ACUTE GLAUCOMA

- Questions??

OCULAR EMERGENCIES

- THANK YOU!!!

CONTACT INFORMATION

- Central Toronto Veterinary Referral Clinic (CTVRC)
- 416-784-4444
- 1051 Eglinton Ave West (NOT Mississauga!)
- info@ctvrc.ca