Enucleation—When and How to Remove the Eye

Annora Sheehan Gaerig, DVM, MPH, Diplomate ACVO

Indications for enucleation surgery and clinical decision-making regarding the recommendation for enucleation will be discussed along with addressing common client concerns and questions regarding the decision and procedure. Surgical approaches and techniques for enucleation in canine and feline patients including retrobulbar nerve block will be discussed.

Learning Objectives

- Review decision-making process for recommending enucleation
- Review detailed surgical procedure for enucleation including variants
- Review of potential complications, strategies to optimize success, and client communication regarding procedures and post-operative expectations

Considerations for deciding when to recommend enucleation:

- Is the eye painful?
- Is the eye visual?
  - Remember to evaluate menace, dazzle, direct and indirect PLR
  - Administration of topical proparacaine and a systemic analgesic may improve ability to assess vision in a painful patient (sometimes heavy sedation/anesthesia is needed for full evaluation of globe but try to assess vision with appropriate analgesia prior to heavy sedation)
- Can pain be controlled during medical or surgical treatment period that would be expected to end pain (and maintain vision)?
- Would eye be likely to have functional vision maintained or restored with surgical or medical treatment?
  - Consideration of factors that led to painful condition important in discussing reasonable expectations for long term vision/globe prognosis and extent of treatment needed
    - Examples: Patient for with chronic absolute KCS that has not been responsive to therapy of adequate duration and compliance that has a deep stromal ulceration. Clients have declined consideration of parotid duct transposition. Corneal grafting surgery may heal the cornea but won't resolve the chronic discomfort of absolute KCS. Enucleation may be more appropriate solution for long term comfort than corneal graft.
- Does the eye have a tumor (or is it nonvisual and/or painful with a possible tumor)?
- Is medical or surgical treatment that may end pain and maintain or restore vision feasible for the owner and reasonable for the systemic health status of the patient when duration of treatment, extent of home care, cost of treatment and comparative duration of anesthesia/possibility of multiple anesthetic events are considered?

If the eye is blind (no dazzle, menace or direct/indirect PLR in globe with an ophthalmic problem likely to result in blindness—glaucoma, chronic proptosis/significant, ruptured corneal ulcer, complete chronic retinal detachment, endophthalmitis) and painful or has an intraocular tumor (too large to resect or client declining consultation regarding possible surgical resection), palliative enucleation with histopathology should be discussed.

So, you've decided recommendation of palliative enucleation is appropriate--what next?

Owner Preparation

Consideration of enucleation is shocking to most owners that have not previously had contact with a monocular pet. Convincing an owner that palliative enucleation is in the best interest of a pet with chronic ophthalmic pain (i.e. glaucoma) can also be difficult in patient not exhibiting overt signs of discomfort recognized by the owner. Discussing type of pain, variable expressions of pain, surgical process and recovery expectations can be very helpful. Discussing likelihood of future need for palliative enucleation early following diagnosis of condition that may result in the need to enucleate can also be helpful. Information on post-operative expectations and risks of complications should also be discussed. Example of a typical "pre-enucleation client talk" will be provided.

Patient Preparation

Pre-operative history, physical examination and preanesthetic bloodwork that includes screening for any indication of or risk factors for uncontrolled hemorrhage at surgery is indicated. Imaging to screen for co-morbidities/systemic neoplasia may be recommended depending on reason for enucleation, signalment, history/PE and owner goals/expectations. Preparation of the operating room and instrumentation guidelines will be discussed along with patient positioning and surgical site preparation. Prepare the anesthesia team for oculocardiac reflex recognition and intervention (rare). Don't forget to lubricate the contralateral eye (in prep, in recovery, to go home). Techniques for retrobulbar block will also be discussed.

Surgical Technique

Surgical technique for Transconjunctival and Lateral/Modified Transconjunctival enucleation will be discussed in detail and reviewed with video, with information on transpalpebral and exenteration techniques also provided.

Post-operative care/owner information

- Oral NSAID and analgesic 3-7 days
- +/- systemic antibiotic 7-14 days (consider skin condition, any potential surgical contamination)
- +/- cold compress for first 1-2 days, if tolerated
- May have hemorrhage from ipsilateral nostril for 24-48 hrs.
- E-collar, no bathing, grooming, swimming, or rough play
- 2-week recheck

Complications

- Hematoma
- Seroma
- Incisional infection
- Dehiscence
- Orbital infection
- Cyst
- Fistula
- Pneumo-orbit/orbital emphysema
- Amaurosis—optic chiasm trauma versus anesthetic/neurologic

Practice Tips:

- Use a retrobulbar block (or if contraindicated, post-enucleation orbital block)

    - Ventrolateral approach (vessels avoid medioventral vessels)—aspirate first, if blood or negative pressure stop/reposition; inject slowly, if resistance stop and reposition
- Remove eyelid margins first
    - Remove eyelid margins in one piece, keeping medial canthal margin intact to avoid medial canthal fistula
    - Then remove third eyelid/third eyelid gland
- Work close to the globe to transect extraocular muscles at insertion to minimize hemorrhage
- When in doubt (is it conjunctiva?) take it out
- Three (or 4) layer closure
    - no nonabsorbable suture subcutaneously (you don't need mesh)

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