

Eye Removal Surgeries in Exotic Pets



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KEYWORDS

• Enucleation • Exenteration • Evisceration • Exotic pets • Rabbits • Birds • Snakes

KEY POINTS

- Considering the anatomic variation of exotic pets and how this affects surgical considerations, approach, and risks is key to a successful surgical outcome.
- Proper equipment and preparedness are important to a successful surgical outcome.
- The orbital venous plexus is well developed in rabbits and several other small mammal species.
- To reduce risk of disrupting the orbital venous plexus and possibly causing severe hemorrhage during enucleation, a subconjunctival approach is preferred over transpalpebral.
- Evisceration offers an alternative to enucleation in birds with ocular disease not involving the orbit or sclera.

GENERAL CONSIDERATIONS FOR OPHTHALMIC SURGERY IN EXOTIC PETS

Ophthalmic examination and diagnosis in exotic pets may be more challenging by nature of issues with stress on the animal and restraint, frequently small size of ophthalmic structures, and often less familiar differential list for the practitioner.¹ Once a diagnosis is made, therapeutic options may be limited by the morbidity associated with frequent administration of medication (capture, restraint) or the its side effects, especially with the small size of many of these patients and the risk of systemic absorption,^{1,2} as well as possible underlying systemic disease with broader implications.³

Surgical management of ophthalmic disorders when possible may alleviate some of these concerns but comes with its own,¹ including patient and client, considerations such as anesthetic candidacy, safety, and cost. Furthermore, anatomic factors dictate that surgical options are often more limited and riskier than in traditional pet species. Finally, surgery may not eliminate the need for postoperative medical treatment and associated morbidity and mortality. The decision to pursue surgery should thus

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come after thorough regard for both the short- and long-term outcome goals and prognosis. Ophthalmic surgical intervention may thus be indicated for pain relief, quality of life (alleviating or reducing medical treatment), restoration of function, biopsy, or cosmesis. Despite these indications, potential drawbacks of surgery may include continued need to treat, some loss of function and associated impact, healing issues and other complication risks, and poor cosmesis.

Anesthesia

For eye removal surgeries requiring general anesthesia, considerations and protocols are the same as for other surgeries, with nuances in terms of preanesthetic management, including variations in fasting, which may be limited or not performed in exotic pet species with generally high metabolic rates and uncommon or impossible (rabbits and rodents) emesis^{4,5}; moisturization in amphibians⁶ and fish⁷; drug doses and administration; patient size; difficult or impossible endotracheal intubation; adequate monitoring; thermoregulation⁸; and recovery, as expected for exotic pets. In addition, because the head is draped in for these procedures, there may be extra challenges in patient observation, and it is essential that appropriate capability and equipment for assessing cardiac, vascular, and respiratory status, as well as depth of anesthesia, are available and functioning.

In patients undergoing anesthesia, there is an increased risk of exposure-related corneal damage due to altered palpebral reflexes with frequent lagophthalmia and decreased tear production.⁹ Unoperated eyes should be generously lubricated with an artificial tear ointment.

Retrobulbar local nerve blocks are commonly used in canine,¹⁰ feline, and large-animal^{11,12} ocular surgeries, particularly enucleations, to help manage intraoperative and postoperative pain and allow decreased depth of and safer general anesthesia, as well as improve ocular position (with slight exophthalmos and central rotation) and exposure. Owing to the small size of exotic pet species and, in some, an orbital venous plexus and risk of hemorrhage, these blocks are infrequently used, although they may be used with caution in rabbits¹³ and other species. A gently curved 23- to 30-gauge needle is inserted at the lateral canthus, through the conjunctiva and along the globe posteronasally. After aspiration to ensure the needle is not in a vascular structure, an appropriate small volume of local anesthetic (eg, lidocaine, bupivacaine) is deposited extraconally. The needle is carefully removed. Potential complications include hemorrhage, laceration of and/or injection into the globe, and injection within the optic nerve sheath with possible effect on the contralateral eye.¹⁴

Traction on the extraocular muscles and optic nerve or pressure on the globe during surgery can result in bradycardia and even cardiac arrest because of the oculocardiac reflex.^{15,16} Both the surgeon and anesthetist should be aware of and prepared for this potential event, which is best avoided altogether or possibly corrected when it does occur, by more gentle manipulation of the globe.

PATIENT PREPARATION

Preparation of the patient's eye and surgical field vary with the surgery to be performed as well as the species. Generally, where applicable, eyelashes are trimmed with small scissors with artificial tear ointment along the blade away from the cornea to catch cut lashes and reduce risk of them entering the surgical field.

In mammals with haired skin, for eyelid and eye removal procedures, an appropriate sized (1–2 in depending on patient size) border from the eyelid margins is clipped with scissors or electric clippers with a small blade (#40 or #50). Loose hairs are removed

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