



## ENUCLEATION IN CATS: INDICATIONS, TECHNIQUES AND POSTOPERATIVE CARE

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### **ABSTRACT**

Objective: To evaluate the efficacy of enucleation in cats, highlighting the main indications, surgical approaches, postoperative recovery and sensory adaptation of felines after the procedure. Enucleation is a surgical intervention performed on cats with serious eye problems, such as incurable glaucoma, severe trauma, intraocular tumors, and treatment-resistant infections. This study, based on a narrative review of the literature of articles published between 2000 and 2023, analyzed surgical techniques, the impact of monocular vision loss, and the sensory adaptation of cats. The findings suggest that enucleation is generally well tolerated by cats, resulting in a satisfactory post-surgical recovery and improved quality of life, especially when performed correctly and with appropriate postoperative care. The switch to monocular vision occurs quickly, especially in cats with progressive vision loss. However, the initial adaptation phase can represent an obstacle, requiring a safe environment and constant support.

**Keywords:** Sensory adaptation. Ophthalmic surgery. Feline enucleation. Quality of life. Postoperative recovery.

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## INTRODUCTION

Enucleation in cats is a surgical procedure indicated for several irreversible ophthalmic conditions that compromise the animal's quality of life. This process involves removing the eye bulb and, depending on the method used, the third eyelid and adjacent structures. Generally, surgery is recommended in situations where the eye does not present the possibility of functional recovery and, instead, becomes a constant source of pain or threat to the animal's health (Gelatt *et al.*, 2011).

The most frequent reasons for enucleation include incurable glaucoma, severe eye trauma, intraocular tumors, infections resistant to medical treatment, irreversible ocular proptosis, and severe uveitis without improvement with conventional treatment (Slatter, 2003). For example, glaucoma is an eye condition that results in increased intraocular pressure. If not properly treated, it can result in severe pain and irreparable vision loss. In these cases, the removal of the eye is the only alternative to ensure the patient's comfort. In situations of malignant tumors, such as diffuse melanoma of the iris or ciliary adenocarcinoma, enucleation prevents the spread of the tumor to other structures of the body (Caplan & Yu-Speight, 2014; Schuster *et al.*, 2020).

Another frequent reason for the need for enucleation is severe eye trauma, such as extensive perforations of the eye, ruptures of the optic nerve, or total dislocation of the ocular bulb. Often, these injuries are caused by cat conflicts, vehicle collisions, or dog bites (Gelatt *et al.*, 2011; Freitas, 2019). In such situations, the possibility of eye recovery is remote, which makes enucleation the most appropriate option to prevent ongoing suffering.

Despite the difficult decision for owners to remove an eye, research indicates that cats that undergo enucleation generally adapt quickly and have a considerable improvement in quality of life, as the process eliminates chronic pain linked to severe eye conditions (Caplan & Yu-Speight, 2014; Schuster *et al.*, 2020). Initially, monocular vision can impair the animal's depth perception, however, felines have an extremely developed sensory system that allows them to compensate for this deficiency through a greater dependence on hearing and smell (Slatter, 2003; Farricelli, 2021).

In addition, enucleation may be essential in urgent circumstances, such as traumatic eye injuries or tumors that put the animal's integrity at risk. In some of these conditions, lack of appropriate treatment can lead to serious complications, such as systemic infections and orbital abscesses (Gelatt *et al.*, 2011; Espíndula, 2023). It is



essential that there is a quick surgical intervention in these cases to ensure that the cat does not present complications secondary to the initial condition.

In this context, the purpose of this article is to expose the main indications, detail the available surgical techniques and discuss the essential postoperative care to ensure an appropriate recovery and reduce complications in cases of enucleation in cats.

## **METHODOLOGY**

This study was based on a narrative review of the literature on enucleation in cats, covering clinical aspects, surgical techniques, postoperative recovery, and prognosis. Scientific articles, specialized books, and veterinary guidelines published between 2000 and 2023 were analyzed. The sources were obtained through searches in databases such as PubMed, Scielo and Google Scholar, using the following descriptors: "feline enucleation", "veterinary ophthalmic surgery", "post-enucleation recovery" and "visual adaptation in cats".

Inclusion criteria included clinical research, systematic reviews, and case reports related to enucleation in pet felines. Studies conducted only in other species or that did not provide pertinent clinical information on recovery after surgery were excluded. The evaluation focused on the effectiveness of the surgical methods, the improvement of the quality of life of the animals and the main complications related to the process.

## **RESULTS AND DISCUSSIONS**

Enucleation in cats is a recommended surgical intervention for various conditions, including intraocular tumors, severe trauma, and serious infections. The results after surgery are intrinsically linked to the technique used, perioperative care and the commitment of the owners to postoperative care. Some research indicates that enucleation is a process well tolerated by felines, with a high success rate and a considerable increase in quality of life (Gelatt *et al.*, 2011).

## **SURGICAL APPROACHES AND THEIR IMPLICATIONS**

The transpalpebral approach is the most recommended in situations of severe eye infection or intraocular neoplasms, as it decreases the risk of cancer cell spread and minimizes the danger of contamination of adjacent tissues. Before starting the procedure, the eyelids are sutured to prevent leakage of ocular contents, followed by



meticulous removal of the eye bulb and nearby tissues (Espíndula, 2023). Research such as those carried out by Schuster *et al.* (2020) indicate a lower rate of secondary infections and greater success in the treatment of intraocular tumors. In addition, this approach is commonly suggested for situations of major ocular trauma, since it prevents complications related to exposure to infected tissues (Slatter, 2003).

On the other hand, the subconjunctival technique is more used in non-infectious situations, such as refractory glaucoma or chronic eye lesions. This approach makes it possible to extract the ocular bulb while maintaining part of the periorbital tissues, which can speed up recovery and reduce discomfort after surgery (Espíndula, 2023). Souza (2022) reports that felines treated with this technique exhibit a lower rate of bruising and a faster recovery compared to the transpalpebral approach. In addition, this approach has been shown to be advantageous for elderly or debilitated animals, since it reduces surgical trauma and reduces surgery and anesthesia time.

#### POSTOPERATIVE RECOVERY AND ADAPTATION

Most cats recover well after enucleation, resuming their normal activities within a few weeks. Silva (2019) points out that, even with the loss of an eye, cats are able to adapt well, using their other senses, such as hearing and smell, to compensate for the absence of binocular vision. However, in the early stages, some felines may have trouble identifying depth, requiring a safe and adapted environment to prevent accidents. It is necessary to observe the animals during this period, as changes in behavior may occur, such as a more intense dependence on the owner and episodes of temporary disorientation.

In addition, studies such as those by Gelatt *et al.* (2011) and Caplan & Yu-Speight (2014) indicate that felines' ability to compensate for sensory stimuli may differ according to age and duration of eye disease. Cats with progressive eye problems usually adapt better, as they have already gone through a process of progressive vision loss, while those who have suffered a sudden enucleation may need more time to adapt.

#### INFLUENCE OF THE INITIAL CLINICAL CONDITION ON PROGNOSIS

The prognosis of patients undergoing enucleation varies according to the previous clinical condition of the animal. Felines that have undergone the procedure due



to neoplasms may have different prognoses, depending on the presence or absence of metastases (Schuster *et al.*, 2020). On the other hand, cats submitted to enucleation due to eye trauma usually have a more favorable recovery, with a lower probability of recurrence of the problem (Slatter, 2003).

Elements such as the animal's age, associated health conditions, and nutritional status are also essential for recovery. Certain studies indicate that younger cats have faster healing and a lower complication rate, while older animals may need extra assistance to ensure proper recovery. Generally, younger animals have faster healing and less likelihood of complications, while elderly felines may need additional support to ensure proper recovery (Gelatt *et al.*, 2011; Caplan & Yu-Speight, 2014).

## POSTOPERATIVE CARE AND COMPLICATIONS

Correct adherence to postoperative care is essential to ensure a good clinical outcome. Surgical wound healing can be influenced by factors such as the age of the animal, the presence of secondary infections, and the owners' commitment to treatment (Espíndula, 2023). It is essential to use the Elizabethan collar and the correct application of antibiotics to prevent complications such as stitch dehiscence or infections (Farricelli, 2021).

In addition, pain after surgery should be monitored and managed with appropriate analgesics. In the first few days, the use of anti-inflammatory drugs and opioids may be necessary, reducing the patient's stress and improving their quality of life in the immediate postoperative period (Farricelli, 2021).

## FINAL CONSIDERATIONS

Enucleation is an efficient method to relieve pain and improve quality of life in cats with severe eye problems. The selection of the surgical method should consider the clinical status of the animal and the predicted prognosis. Veterinary supervision after surgery and adherence of owners to the guidelines are essential to reduce risks and ensure an appropriate recovery. In addition, in the first few days, the cat's adaptation to monocular vision can be a challenge, however, the compensatory sensory ability of cats helps in a quick return to normality. Research indicates that with a suitable environment and the appropriate support of caregivers/caregivers, most enucleated cats are able to maintain an active and pain-free life.



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