

MANAGEMENT OF BULBUS OCULI PROLAPSE IN A CAT AT JOGJA VETERINARY CLINIC, YOGYAKARTA

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Abstract

Enucleation is an orbital surgical procedure performed on patients with indications of increased intraocular pressure due to glaucoma that cannot be treated with medication, intraocular neoplasia that may cause intraocular pain, or severe trauma. Prolapse of the bulbus oculi in cats is generally caused by glaucoma (increased intraocular pressure), bacterial or viral infections, trauma from being hit by a vehicle, scratches, fights with other animals, or ocular tumors. The purpose of this report is to describe the management of enucleation in cats at Jogja Veterinary Clinic, Yogyakarta. The subject of this case is a female cat named Telon, approximately four months old, weighing 1.65 kg, who was brought to Jogja Veterinary Clinic with a complaint of a protruding eye. Based on anamnesis, physical examination, and clinical symptoms, Telon was diagnosed with bulbus oculi prolapse and underwent enucleation surgery as a medical intervention. The treatment provided included antibiotics, vitamins, analgesics, and topical ointment. The cat received postoperative care for four days and showed good wound healing. It was concluded that the enucleation procedure using the transpalpebral technique in Telon had a favorable prognosis.

Keywords: Prolapse of the Bulbus Oculi, Cats, and Enucleation

INTRODUCTION

Cats are pets that require proper care and attention for their maintenance and breeding. As companion animals, they have a unique appeal due to the variety in their body shapes, eye structures, and fur colors. Additionally, they need proper care to prevent various diseases, especially those affecting the eyes.

The eyes are one of the primary sensory organs essential for many living beings, including humans and animals. Due to their external position, the eyes are highly susceptible to injury, even though they are protected by the orbital cavity and eyelids (Maharani et al., 2022). Several factors can cause eye disorders, including bacterial infections (*Chlamydia felis*), viral infections (feline rhinotracheitis), parasitic

infestations (*Thelazia sp.*), neoplasia, genetic factors, and trauma (Gelatt et al., 2022).

Prolapse of the bulbus oculi, also known as proptosis, is a condition in which the eyeball protrudes from the orbital cavity, often accompanied by subconjunctival hemorrhage and even optic nerve rupture (Mitchell, 2008). Secondary orbital hemorrhage can lead to swelling and displacement of the bulbus oculi from its normal position within the orbital cavity (Kumar et al., 2016). This condition commonly occurs in companion animals, particularly dogs and cats. Proptosis-related blindness affects approximately 60%–70% of dogs and nearly 100% of cats (Fossum, 2018).

In cats, prolapse of the bulbus oculi is generally caused by glaucoma (increased intraocular pressure), blunt or sharp trauma, impact injuries, kicks, accidents involving vehicles, scratches, fights with other animals, or eye tumors (Singh et al., 2013). In most cases, eye diseases in animals are not life-threatening. However, when severe ocular damage occurs, such as proptosis with eyelid laceration, corneal ulceration, or significant eyeball destruction, surgical intervention becomes necessary.

Enucleation is an orbital surgical procedure performed in cases of increased intraocular pressure due to glaucoma that cannot be managed with medication, intraocular neoplasia causing ocular pain, severe trauma leading to perforating eye injuries or lens damage, intraocular infections (endophthalmitis), phthisis bulbi, proptosis, and retrobulbar diseases (Singh et al., 2013). The complete removal of the eyeball through enucleation is considered when the eye is irreversibly blind and painful, when there is tumor growth affecting the eyeball and surrounding tissues, extensive ocular tissue damage, or purulent eye infections (Kumar et al., 2016).

Enucleation involves the removal of the eyeball along with part of the anterior optic nerve while preserving the conjunctiva, Tenon's capsule, and extraocular muscles. The procedure can be performed using two surgical approaches: the subconjunctival approach and the transpalpebral approach (Al-Asadi, 2012; Schulz & Anderson, 2010).

MATERIALS AND METHODS

The activity took place from September 25 to 29, 2023, at Jogja Veterinary Clinic, located at Jalan Pamularsih No. 55, Klaseman Condongcatur, Ngabean Wetan, Sinduharjo, Nganglik District, Sleman Regency, Special Region of Yogyakarta 55581.

The diagnostic methods used by the veterinarians at Jogja Veterinary Clinic included anamnesis, physical examination, and supporting tests (hematological examination). The condition of the cat's eyes can be seen in Figure 1. The management of the protruding eyeball was performed through a surgical procedure. The surgical technique employed was enucleation of the bulbus oculi via the transpalpebral approach, with an incision along the edge of the eyelid (Mitchell, 2008). The premedication used was V-tropin (Atropine) at a dose of 0.3 ml, administered subcutaneously. The anesthetic used was Ketamine, administered at a dose of 0.017 ml.



Figure 1. Cat with a bulbus oculi prolapse condition.

The surgical procedure began by identifying the orientation point for the right eye, followed by a slow incision along the extraocular muscles. The eyeball was then carefully removed from the orbital cavity, and ligation was performed on the blood vessels and optic nerve. A new incision was made at the edges of the upper and lower eyelids, and these were also ligated. The area around the incision and ligation was cleaned with saline solution to remove any remaining blood clots. Subsequently, the subcutaneous tissue was sutured using a simple continuous stitch with 3/0 Vicryl thread. The edges of the upper and lower eyelids were stitched using simple interrupted sutures with 3/0 silk thread. After suturing, the area was cleaned with saline and treated with an antiseptic.

RESULT

On September 25, 2023, a cat was brought to the clinic by its owner with a complaint of the right eye protruding after having been missing for several days. The cat's details are as follows: its name is Telon, approximately 4 months old, calico-colored fur, and weighing 1.65 kg.

The results of the physical examination conducted on Telon using the methods of inspection, palpation, percussion, and auscultation are shown in Table 1. Table 1. Results of Physical Examination

Jenis Pemeriksaan	Hasil	Standar	Keterangan
Suhu	38,2°C	38,0°C-39,2°C	Normal
Turgor Kulit	<2 detik	<2 detik	Normal
Pernafasan/Respirasi	34x/menit	25-40 x/menit	Normal
Denyut nadi/Pulsus	120x/menit	110-220 x/menit	Normal
Frekuensi Jantung	160x/menit	140-210 x/menit	Normal
Mata (kanan)	Pendarahan, Menonjol	Jernih	Hifema, abnormalitas

The physical examination revealed that the right eye was prolapsed (protruding outward), and the cat was unable to open or close the eyelid. The pupil showed no reaction to light, remaining dilated, and the iris appeared yellow with blood spots. The palpebral area exhibited signs of hyphema. The general condition of the patient was active and responsive, with a good appetite and water intake.

Upon palpation, the patient's temperature was normal, there was no swelling, and both the pulse rate and respiratory rate were within normal limits. During percussion, tapping on the chest area produced a loud sound, indicating normal resonance. In auscultation, the heart sounds "lub" and "dup" were heard, indicating normal cardiac function.

The supporting examination

performed was a hematological test. A 1.5 ml blood sample was collected from the cephalic vein and placed into an EDTA (Ethylene Diamine Tetraacetic Acid) tube. The hematological examination was conducted to assess the cat's health status prior to the surgical procedure. The results of the blood test can be seen in Table 2.

Table 2. Results of the Hematological Examination

Hematologi	Hasil	Referensi	Satuan	Keterangan
Hemoglobin	9,5	9,5-15	g dL	Normal
Eritrosit	8,34	6-10	$\times 10^6/\mu\text{L}$	Normal
Hematocrit	28,1	24-45	%	Normal
MCV	33,8	41-54	fL	Rendah
MCH	11,3	13,3-17,5	Pg	Rendah
MCHC	33,8	31-36	%	Normal
RDW	20	14-31	%	Normal
Leukosit	12.400	5.500-19.500	μL	Normal
Neutrofil	83,3	35-75	%	Tinggi
Eosinofil	0	2-12	%	Rendah
Basofil	0	Rare	%	Normal
Limfosit	13,6	20-55	%	Rendah
Monosit	3,1	1-4	%	Normal
Trombosit	1,81	1,5-6	$\times 10^5/\mu\text{L}$	Normal

References: (Vaden et al., 2011).

Based on the examination results, the cat Telon was diagnosed with bulbus oculi prolapse, with a favorable prognosis. Surgical enucleation was then planned as the treatment.

DISCUSSION

Based on the diagnosis of Telon the cat, the chosen treatment was surgical enucleation, which involved a procedure on the eye area to remove the eyeball by cutting through the surrounding tissues and nerves (Stades et al., 2007). The eyeball had undergone necrosis, leading to the decision to perform bulbus oculi enucleation. This is in line with Mitchell (2008), who states that enucleation is recommended when the eye is blind and painful, and the condition cannot be treated with medication.

The preoperative phase included fasting the patient for 12 hours before the procedure, setting up an intravenous drip, sterilizing the

patient, and administering anesthesia. Premedication was given one hour before the procedure by injecting 0.35 ml of V-Tropin (Atropine) subcutaneously. The anesthetic used was Ketamine at a dose of 0.017 ml, administered intravenously. Once the patient was unconscious, it was positioned laterally on the operating table, and the fur was shaved, followed by cleaning the area around the eye surgery site with saline solution (NaCl).



Figure 2. First day post-operation



Figure 3. Fourth day post-operation

The results of the post-operative care are shown in Figures 2 and 3. The post-operative phase begins when the patient is transferred from the surgical room to the post-operative unit and ends when the patient is discharged. A critical step during enucleation surgery is the ligation of the main blood vessels and the optic nerve at the base of the eyeball, as well as controlling any bleeding (Maharani et al., 2022). In this case, the surgery proceeded smoothly, with minimal bleeding, likely due to the necrosis of the eyeball tissue, which reduced blood flow to the eye.

Post-operative care included several steps: the surgical site was cleaned once daily in the morning with NaCl solution, and Bioplacenton ointment was applied topically. A collar was placed on the cat to prevent it from scratching the wound. The cat's movement was restricted by keeping it in a cage.

The post-operative medication included antibiotics, multivitamins, analgesics, and topical antibiotics. Ceftriaxone 1g was administered at a dose of 0.35 ml/IV twice daily, while Bioplacenton was applied as a topical antibiotic. Hematodin multivitamins were given at a dose of 0.2 ml/IM once daily. Tramadol analgesic was administered at a dose of 0.1 ml/SC once daily.

CONCLUSION

Based on the anamnesis, physical examination, clinical symptoms, and supporting tests, the cat named Telon was diagnosed with Prolapse of the Bulbus Oculi. The treatment administered was enucleation surgery, successfully performed as a last resort when the condition could not be managed with medication. Postoperative treatment included antibiotics, vitamins, analgesics, and topical antibiotics. The cat underwent postoperative care for four days and showed good wound healing progress.

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