CASE REPORT
JIVA 19 (1) April 2021

Received: 17.03.2021
Accepted: 22.03.2021

ENUCLEATION OF EYE FOR THE MANAGEMENT OF TRAUMATIC PROPTOSIS IN A PERSIAN CAT

Reshmi Raveendran[1*] and Deepu Philip Mathew[2]

[1]MVSc Scholar, Veterinary Parasitology, College of Veterinary and Animal Sciences, Mannuthy, Thrissur-680651
[2]Senior Veterinary Surgeon, Veterinary Polyclinic, Chengannur
Corresponding author: rechuviolet@gmail.com

ABSTRACT

An eleven month old female Persian cat, was presented at Veterinary Polyclinic Chengannur, with a complaint of injury and protrusion of left eye. On clinical examination, proptosis of left eye could be detected and the affected eye was found to be blind. Advised enucleation of the eye as a remedy. The cat was presented on the day of surgery after an overnight fasting. The clinical parameters were found to be normal. Enucleation of left eye was done under general anaesthesia. Then managed with antibiotics and analgesics for the next 5 days. The cat recovered uneventfully and adapted well to the condition.

Keywords: Proptosis, Exenteration, Enucleation

INTRODUCTION

Proptosis is a medical condition which causes a cat's eye to move forward and protrude from its eye socket, and is typically noticeable (and unseemly) medical condition. The condition is frequently associated with a head trauma and is often vision threatening (Grahn *et al*., 2004). The two most common diagnoses for this condition are buphthalmia, when the globe of the eye has become enlarged and exophthalmia, when the globe of the eye has been displaced forward, causing it to protrude from the normal eye socket location (Maggs *et al*., 2013).

Removal of eye is reserved as a last option to alleviate the pain of a non-functional eye (Kumar, 2001). Schulz and Anderson (2010) reported that proper preparation of the patient, appropriate preoperative management and good surgical technique positively contribute to the success in ophthalmic surgeries. The two surgical options for removal of eye are exenteration, which is the removal of

eye and all tissues within the eye socket including muscles primarily used for the removal of a cancerous eye mass, whereas, enucelation is removal of the eyeball without taking all the surrounding tissues (Cho, 2008). Enucleation incudes surgical removal of eye, eyelid margin, nictitating membrane and lacrimal gland (Wilding *et al*., 2015). Venugopalan (2020) enumerated the conditions demanding enucleation of eye as irreparable cornea, severe proptosis, intra-ocular injury that are unresponsive to therapy, intra-ocular neoplasia, end-stage glaucoma, severe untreatable trauma, such as a perforated or ruptured eyeball and congenital deformities of the eye.

There are five straight and two oblique muscles of the eyeball: Superior rectus, inferior rectus, external rectus, internal rectus, posterior rectus, superior oblique, and inferior oblique. These muscles originate around the optic foramen and are inserted on the sclera behind the attachment of conjunctiva. Three approaches for enucleation includes transconjuctival, transpalpebral and lateral enucleation, and the technique which chosen should reflect the pathological circumstances of eye to be removed, patient anatomy, surgeon's preference to avoid severe traction on globe and optic nerve (Gelatt *et al.,* 2021). Transconjuctival enucleation technique is a preferred technique to avoid orbital tissues loss and intraoperative bleeding (Bellhorn, 1972).

Gelatt *et al.* (2011) observed the most frequent long-term complication after enucleation to be the contracture of orbital space and concavity of the permanent complete tarsorrhaphy. Most animals are fully recovered from the surgery and are acting normal within 48 to 72 hours and the regrowth of hair and whiskers improves the cosmetic appearance. Unilateral eye enucleations do not interfere with the primary visual perception, mobility or functional ability of the animal.

CASE HISTORY AND OBSERVATION

An eleven-month-old female Persian cat, Noora, was presented with a complaint of suspected injury and bulging of left eye which resulted from the fight with other cats. Initially the wound near left eyeball was very small and after two days of injury, the size was found to be increased and bleeding was noticed. On physical examination, trauma and protrusion of left eyeball was noticed. The cat was suffering from severe pain and did not exhibit palpebral reflex.

Details of the ophthalmic examination performed are shown in the table below.

Table: Results of the ophthalmic examination

	OD	OS
Fluorescein Dye Test	Negative	Positive
Palpebral reflex	Positive	Negative
Menace test	Positive	Negative

Based on the history and clinical signs, the condition was diagnosed as proptosis of left eye. The haematological and serological parameters were normal. Hence, surgical correction was resorted to.

TREATMENT AND DISCUSSION

The cat was presented on the day of surgery after an overnight fasting. Premedicated with antibiotic Cefotaxime at a dose rate of 25 mg/kg body weight and Meloxicam at a dose rate of 0.05 mg/kg body weight intravenously. Anaesthesia was induced with a mixture of Xylazine hydrochloride at a dose rate of 1mg/kg body weight and Ketamine hydrochloride @ dose rate of 30 mg/kg body weight intramuscularly.

Maintenance of anaesthesia was achieved using the same mixture at a dose rate of $^{1}/_{3}{}^{rd}$ of the induction dose as slow IV given to effect. After aseptic preparation of site, the eyelid margins were sutured together (stay suture) in simple interrupted pattern leaving the ends long to allow for handling. A sharp incision was made around the palpebral border through the skin from medial canthus towards lateral canthus. Blunt dissection was done between the skin and conjunctiva (Fig.1) to enter the orbital cavity.

Transection of eye muscles were done to free the eyeball from its lateral attachments. Clamped the optic nerve and vessels with a curved haemostat and then a ligature was applied at the base using size '0' chromic catgut. A second haemostat was applied above the first one and eyeball was removed by cutting the tissues between the two clamps (Fig.2).

Permanent tarsorraphy was done leaving a small gap at the inner canthus. Through this gap, the orbital cavity was packed with gauze dipped in Tr. Benzoin to control bleeding, leaving a tip through medial canthus.

Post-operatively antibiotic Cefotaxime was administered at a dose rate of 25 mg/kg body weight intravenously for 5 days. Advised Elizabethan collar and also to isolate it from clowder for two weeks post-operatively. The gauze was removed on the third post-operative day (Fig. 3) and sutures were removed on the 10^{th} post-operative day. The animal recovered uneventfully without any post-operative complications. The hair and whiskers had grown back within two months (Fig. 4) and the appearance of the cat was improved.

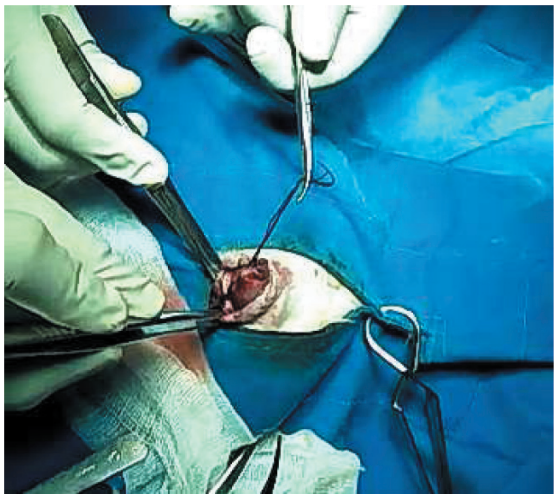

Fig.1 - Blunt dissection between skin and conjunctiva

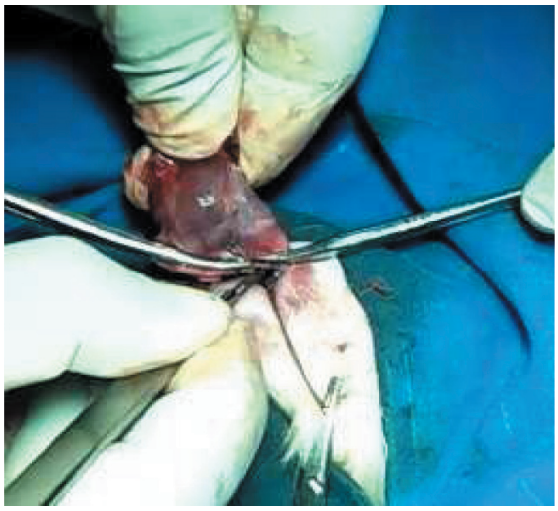

Fig.2 - Removed the eyeball and lens

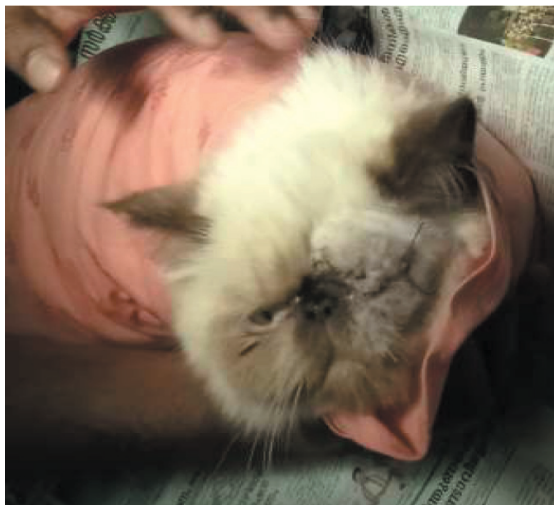

Fig. 3 The animal after removal of gauze on third post-operative day

Fig. 4 The appearance of the animal after two months

SUMMARY

A cat was presented with traumatic proptosis of left eye. Enucleation of eye ball was performed and the animal recovered uneventfully without compromising aesthetic appearance.

Ethics statement: This study was performed on clinical case and surgical management was done upon informed consent of owners and did not involve any animal experimentation.

ACKNOWLEDGEMENT

The authors are thankful to the Director, Animal Husbandry Department, Kerala for providing facilities for the study.

REFERENCES

Bellhorn, R.W. 1972. Enucleation technique: a lateral approach. *J. Am. Anim. Hosp. Assoc*. **8**:59–60.

Cho, J. 2008. Surgery of the globe and orbit, *Top. Companion Anim. Med.* **23**: 23-37.

Gelatt, K.N., Ben-Shlomo, G., Gilger, B.C., Hendrix, D.V., Kern, T.J. and Plummer, C.E. eds. 2021. *Veterinary ophthalmology*. John Wiley & Sons Publishing, 2752p.

Gelatt, K.N., Gelatt, J.P. and Plummer, C. 2011. *Veterinary Ophthalmic Surgery-E-Book*. Elsevier Health Sciences, pp.51-88.

Grahn, B.H., Cullen, C.L. and Peiffer, R.L.2004. *Veterinary Ophthalmology Essentials*. Butterworth-Heinemann, Reed Publishing, USA, 392p.

Kumar, A. 2001. *Veterinary Surgical Techniques*. Vikas Publishing House Pvt Ltd, pp. 104-110, 198-203.

Maggs, D.J., Miller, P., Dacvo, D.V.M. and Ofri, R. 2013. *Slatter's Fundamentals of Veterinary Ophthalmology*. 5th edition, Elsevier Health Sciences, pp. 496–531.

Schulz, K.L. and Anderson, D.E. 2010. Bovine enucleation: A retrospective study of 53 cases (1998–2006). *Canadian Vet. J.* **51**:611-614.

Venugopalan, A. 2020. *Essentials of Veterinary Surgery*. Oxford and IBH Publishing. **51:**384-385.

Wilding, L.A., Uchihashi, M., Bergin, I.L. and Nowland, M.H.2015. Enucleation for treating rodent ocular disease. *J. Am. Ass. Lab. Anim. Sci.* **54:**328-332.