ENUCLEATION FOR MANAGEMENT OF CHRONIC CASE OF TRAUMATIC PROPTOSIS IN A CAT

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Introduction

Removal of eye is indicated in animals in such cases when it has reached a point where it has no chance of being capable of return of sight and it is very painful to the patient (Mitchell, 2008). Trauma to the eye such as an infected scratch injury or puncture to the eye by fighting with other animal or hitting of the eye with sharp object), tumors of the eye, glaucoma (increased pressure inside the eye) are considered to be most common causes for creation of a painful, blinded eye (Gilger *et al*., 1995). The present communication puts on a record of chronic case of traumatic proptosis managed successfully by enucleation technique in a non-descript cat.

Case History and Clinical Findings

A 2 year old non-descript tom cat was presented with the history of protruded left eyeball along with discharge of serosanguineous fluid from the affected eye. Anamnesis revealed that the cat suffered traumatic injury to eyaball due to infighting with another male at owner's residence 9 days back leading to protrusion of eyeball. However, the consultant Veterinarian tried to push it back into orbital cavity but failed to do so because of excessive swelling. Meanwhile in due course of time eyeball became dessicated and infected leading to necrotic changes. Close examination of the patient revealed completely damaged eye globe as evidenced by completely blackish colured eyeball along with discharge of slight pus from the base of eyeball (Fig. 1). The clinical eaxmination of the patient revealed normal rectal temperature (101^0F), tachycardia (heart rate 130 per minute) and tachypnea (29 breaths per minute). The hematological profile revealed normal hemoglobin value (12.6g/dl) with slightly increased TLC values (13,600/cu. mm) and neutrophilia (76%) giving indication of low level of infection. Hence, it was planned for removal of the infected eyeball under general anaesthesia.

Fig. 1: Presented cat with severely damaged left eyeball

Fig. 2: Ligation of optic nerve and associated blood vessels

Surgical Procedure

The animal was administered with 50 ml DNS and broad spectrum antibiotics ceftriaxone and tazobactum combination @ 25 mg/ kg followed by premedication with atropine sulphate @ 0.04 mg/kg body wt. SC. Anaesthesia was induced with a combination of xylazine hydrochloride @ 1 mg/ kg body wt. IM followed 10 minutes later by ketamine hydrochloride @ 10 mg/kg body wt. IM. Aseptical preparation of periorbital skin and eyelids by clipping the periorbital area and irrigating the periorbital tissues and globe with

normal saline was carried out in routine manner prior to surgery.

A lateral canthotomy was performed and eyelid margins 5 mm posterior to the mucocutaneous junction in a single continuous fashion were removed with help of scissors to increase the surgical exposure. It was followed by grasping of third eyelid with tissue forceps which was removed along with the gland of the third eyelid, using tenotomy scissors. A 360 degree bulbar conjunctival incision was made 2-3 mm posterior to the limbus and extended posteriorly, bluntly dissecting the conjunctiva and Tenon's capsule from the globe. The extraocular muscles were transacted close to their insertion on the globe. The optic nerve and associated blood vessels were ligated with help of Catgut No. 1 (Fig. 2) taking care that excessive tension over optic nerve is not applied to prevent damage to optic chiasma. The eye globe was removed just above the ligature, taking care not to puncture the globe.

Fig. 3: Skin closure with simple interrupted sutures using silk

Fig. 4: Complete recovery after removal of sutures

The conjunctiva and subcutaneous tissues were closed with 2-0 polyglycoloc acid suture in a simple continuous pattern followed by apposition of the skin with braided silk No. 1 in a simple interrupted pattern (Fig. 3).Topical antibiotic therapy with tobramycin eye drops @ 3-4 drops QID for 7 days along with analgesic flubiprofen eye drops @ 3-4 drops QID for 3 days was advised to the patient. Systemic antibiotic therapy was continued with ceftriaxone and tazobactum combination for 5 days along with flushing of the eyeball area with lukewarm normal saline twice daily. Skin sutures were removed on 12th postoperative day and patient made an uneventful recovery (Fig. 4). No complications were observed in a follow up period for 9 months.

Discussion

Enucleation is the most common orbital surgical procedure performed by veterinary ophthalmologists and general practitioners and is generally indicated in patients with blind, painful eyes or patients with nonresectable intraocular tumors (Spies, 2007). The three most commonly described enucleation techniques are the subconjunctival, lateral and transpalpebral approaches. The main objectives of the subconjunctival technique are to remove the globe, nictitating membrane, and eyelid margins, in that order, while preserving as much soft tissue as possible to minimize subsequent orbital depression (Slatter and Wolf, 1993; Kuhns, 1976) The lateral approach removes the tissues in a similar order but first involves partially excising the eyelids for better surgical exposure (Bellhorn, 1979). The transpalpebral technique is often used in patients with associated ocular surface infection or neoplasia. This method involves suturing the palpebral fissure closed and removing the globe, nictitating membrane, and conjunctiva as one encased unit to prevent contact between the remaining ocular surface and orbital content (Wolf, 1990).

However, in present clinical case a modification to the routine subconjunctival enucleation technique (Kuhns, 1976) that involves removing the eyelids and nictitating membrane before excising the globe. This method offers good visibility and better access to the globe and extraocular muscles. After eyelid margin and nictitating membrane

removal, the globe is easily visualized and manipulated. Extraocular muscles can be easily followed to their attachments, and the globe can be positioned to see the optic nerve before transection. Clamping the optic nerve with hemostats or ligating the associated vasculature before optic nerve transaction is routinely practiced in this technique (Ramsey and Fox, 1997; Slatter, 2001). Where possible, the optic nerve and ciliary blood vessels are tied with a ligature. The purpose of this ligature is both to reduce haemorrhage and to close the nerve sheath which directly communicates with the central nervous system, preventing reflux of blood or leakage of cerebrospinal fluid. Extra special care must be taken to avoid traction of the optic nerve, as this force is transmitted to the optic chiasm and may damage the contralateral optic nerve resulting in blinding the contralateral eye, which shows a fixed dilated pupil after surgery (Mitchell, 2008).

Easier access to the optic nerve is particularly important in cats because their tight palpebral fissures and short optic nerves make enucleation more challenging. The optic chiasm can be damaged if excessive traction is placed on the globe, resulting in possible blindness in the contralateral eye after enucleation (Stiles *et al*., 1993; Slatter, 2001). The modified subconjunctival enucleation technique offers an alternative approach for globe removal in dogs and cats. This technique is not indicated in patients with corneal ulcers or ocular infections. In such cases, a transpalpebral technique is more appropriate. In our case, this method was not associated with any adverse complications.

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