

SURGICAL MANAGEMENT OF BILATERAL PROLAPSE OF THE THIRD EYELID GLANDS IN A NORWICH TERRIER

NNAJI, Theophilus, UDEGBUNAM, Sunday, OGBANYA, Kenneth and OFFOR, Gregory

Department of Veterinary Surgery, University of Nigeria, Nsukka, Nigeria.

Corresponding Author: Nnaji, T. Department of Veterinary Surgery, University of Nigeria, Nsukka, Nigeria. **Email:** theonnaj@gmail.com **Phone:** +234 8064813448

ABSTRACT

An 8-month old Norwich terrier breed of dog that presented with bilateral prolapse of the third eyelid glands was treated surgically using the modified Morgan's pocket technique in combination with the tacking of the third eyelids to the periorbital periosteum. The physiologic, haematological and biochemical parameters taken prior to treatment were all within the normal values. The combined surgical approaches adopted for the treatment were clearly described as well as the post operative management. The patient had a rapid positive response without recurrence even after 4 months, unlike what is always seen when the modified Morgan's pocket technique is used alone.

Keywords: Third eyelid glands, Prolapse, Surgical management, Norwich terrier dog

INTRODUCTION

Prolapse of the nictitans gland is a common problem in several breeds of dog. It occurs much less commonly in cats. Recent data have shown particularly high prevalence of third eyelid gland prolapsed in Neapolitan Mastiffs, American Cocker Spaniels, Lhasa Apsos and brachycephalic breeds such as Bulldogs and Shih-Tzus (Zabell, 2007). In particular, brachycephalic breeds have a genetically determined eye and lid structure that may require stronger connective tissue to hold the gland in place within the eyelid. In these dogs, any inflammation of the conjunctiva can cause retraction of the globe, which forces the lid and gland out of the orbit and often into a state of prolapse. When the gland is no longer protected by the warm, moist environment behind the third eyelid, it is exposed to environmental elements such as wind, dirt and dust that can abrade and desiccate the third eyelid gland (Zabell, 2007). This results in a secondary inflammation of the gland and conjunctival tissue.

In response to the inflammation, the gland begins to hypertrophy. In most cases, this abnormal swelling and thickening prevent the gland from returning to its normal position. Inflammation and hypertrophy of the gland account for its red, swollen appearance at the medial canthus of the eye (Zabell, 2007). When the nictitans gland prolapses it passes between the third eyelid and the globe to appear over the free border of the third eyelid. The prolapsed gland results in a pink-colored mass at the medial canthus, hence the descriptive term "cherry eye." Once prolapsed, mild inflammation and venous congestion of the gland can develop and the presence of the prolapsed gland disrupts the normal anatomical relationship between the third eyelid and cornea. The condition has a characteristic appearance and usually additional diagnostics are not required (Petersen-Jones, 2014).

Several techniques have been developed over the years for replacing the prolapsed nictitans gland (Moore, 1983). The problem with most of these techniques was not the replacement, but the fact that a high percentage

of the cases always came down with the same condition some weeks after reduction. In Nigeria, this condition is not so common probably due to the small population of brachycephalic breeds in the country. This report describes the treatment of cherry eye in an eight months old Norwich terrier using a modified Morgan's technique with tacking of the third eye lid to the ventral periorbital periosteum.

MATERIALS AND METHODS

Case History: An eight month old female Norwich terrier weighing 6.5kg was presented at the Small Animal Clinic of Veterinary Teaching Hospital, University of Nigeria, Nsukka on 2nd January, 2014 with chief complaint of bilateral reddish growths on the medial canthus of the eyes. History showed that the mass was noticed about two months before presentation and had been increasing in size with time. The bitch stayed with another four-year old dog and was fed mainly on meat, fish, canned foods, milk and tea. The vaccination history was unknown. The physiologic parameters such as haematological and serum biochemical values were determined using standard protocols.

Pre-surgical preparation: The periorbital area of the right eye was shaved and scrubbed with gauze sponges impregnated with hibitane hydrochloride making sure the antiseptic agent did not enter the eye.

Anaesthesia: Atropine sulphate (amopin®) was given at a dose of 0.04mg/kg, followed by injection xylazine hydrochloride (Indian imunobiologicals) at 1mg/kg intramuscularly. Anaesthesia was induced with pentobarbitone sodium (Kyron South Africa) at a dose of 15mg/kg intravenously.

Surgical procedure: The patient was positioned on sternal recumbency and the head held parallel to the surgical table with the help of sand bags.

Drapes were placed in a triangular pattern around the eye and held in place with towel clamps. An eyelid speculum was used to hold the upper and lower eyelids open for the surgery.

Modified Morgan's pocket technique was carried out on the prolapsed gland. This was re-enforced by tacking the third eye lid to the ventral periorbital periosteum as follows: The ventral orbital rim was palpated through the skin ventral to the lower eyelid, and a small skin incision equal in length to the width of the third eyelid was made directly over the orbital rim to expose the periosteum. A suture was anchored to the periosteum at the lateral aspect of the incision using size 3.0 polydioxinone suture. The suture was then run under the skin to exit laterally under the lower lid at the base of the third eyelid. It was then run through the inner tissue of the third eyelid along its lateral edge to exit at the lateral aspect of the free margin. The suture was looped around to re-enter the third eyelid at the bulbar side, and then ran through the third eyelid tissue along the free margin to exit at the medial aspect. The suture was again looped around to reenter the tissue at the medial aspect of the free margin. It was then ran along the medial edge of the third eyelid and exited medially at the base of the third eyelid under the lower lid. The suture was again run under the lower lid to exit at the medial aspect of the skin incision. The suture was then pulled tight, and the third eyelid was buried under the lower eyelid margin. The suture was finally anchored to the periosteum before the closure of the skin incision with size 2.0 silk in a simple interrupted fashion. The right eye was operated first followed by the left eye a week after.

Post-operative management: The post surgical management included; topical application of penicillin ointment t.i.d 1/52, injection of dexamethasone 4mg/kg IM x 3/7, injection of procaine penicillin 10,000IU/Kg IM x 5/7 and injection of streptomycin sulphate 10mg/kg IM x 5/7. The eyes were bandaged after each application of the ointment.

RESULTS AND DISCUSSION

The physiologic parameters were all normal (Table 1).

Table 1: Vital parameters

Parameters	Patient value	Normal value
Temperature (°C)	38.6	38.5 – 39.5
Pulse rate (beats/min)	112	90 – 120
Respiratory rate (cycles/min)	16	15 – 30

The patient was alert and active with lustrous hair coat but the mucous membrane of the eyes were congested and the third eyelid glands were prolapsed (Figures 1 and 2). The stages of the eye during and post surgery are presented (Figures 3 – 5), leading to fully recovered eye four months post surgery (Figure 6).



Figure 1: The patient on the day of presentation (The arrows show the reddish prolapsed glands)



Figure 2: The prolapsed third eyelid (right) before surgery (arrow)

The haematological and serum biochemical values were all within the normal values (Table 2).

Table 2: Patient's Haemogram/serum biochemical values

Parameters	Patient's value	Normal value
Packed cell volume (%)	40	37-55
Haemoglobin (g/dl)	16	12-18
RBC count (x10 ⁶ µl)	7.2	5.0-8.5
WBC count (x10 ³ µl)	6.8	6.0-17.5
Neutrophils (%)	62	60-70
Eosinophil (%)	2	2-10
Monocytes (%)	4	3-9
Basophils (%)	-	0-0.3
Lymphocytes (%)	15	12-30
Alanine transferase (µl)	12	8.2-57
Aspartate transferase(µl)	16	9-49



Figure 3: The right eye immediately after the surgery



Figure 4: The right eye seven days post operation

Deeply located in the third eyelid is a seromucous gland which produces part of the basal tear film that lubricates the cornea and cleanses it from debris (Brooks, 1991).

The common conditions encountered in this gland are nictitans neoplasms and nictitans prolapse/protusion (Hamor, 2003).



Figure 5: The left eye immediately after the operation



Figure 6: The patient eye four months after the surgery

A prolapsed superficial gland of the third eyelid appears as a bright red mass in the medial canthus of the dog's eye and is nicknamed "cherry eye". The Cherry eye is found commonly in Chihuahua, Beagles, Cocker spaniels, Boston Terriers, Poodles, Lhasa Apso and Pekingese of less than a year old. The condition which may occur unilaterally or bilaterally is thought to be due to the weakness in the connective tissue attachment between the nictating membrane and the periorbital tissues.

In this case, the condition could have been as a result of environmental influence on the eye which predisposed to the prolapse. According to the owner, the patient was imported from

United State of America four months prior to presentation.

The condition is treated either by surgical excision or by repair of the prolapsed superficial gland. (Fossum *et al.*, 2002). Surgical excision is not always the best approach unless in case of neoplasia. This is because this gland produces up to 50% of the tear films. Its excision may predispose the eye to keratoconjunctivitis sicca (Slatter, 2001). In this case, the modified Morgan's technique with tacking of the prolapsed third eyelid to the ventral periorbital periosteum was done and it was prognostically favorable. This gave us an impressive result with no recurrence after several months post operation. From literature it was discovered, that with pocketing technique alone, there is always high rate of recurrence. The last resort when there is recurrence was the use of tackling technique (Morgan *et al.*, 1993; Zabell, 2007). What were spectacular about the management of this particular case were the combined techniques which we applied at the onset of the management thereby leaving no chance for recurrence.

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