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CLINICAL EVALUATION OF SURGICAL TREATMENT OF CHERRY EYE WITH MODIFIED MORGAN POCKET TECHNIQUE

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ABSTRACT

Prolapse of the gland of the third eyelid “cherry eye” is caused by defects in the attachments between the third eyelid gland and periorbita. In this study, the aim was to evaluate the characteristics of cases and clinical outcomes of Morgan’s pocket technique in the treatment of dogs with prolapse of the gland of the third eyelid. In this context, the characteristics of the cases were examined in 12 dogs diagnosed with “cherry eye”. The breeds were Cane Corso, Beagle, Shih Tzus, Maltese, Central Asian Shepherd Dog and mixed breed. All dogs underwent surgical treatment with Morgan’s pocket technique, and the clinical results, recurrence and complications were evaluated in all 12 dogs (20 eyes). The success rate of the 12 patients (20 eyes) without

recurrence was 100% (12 cases). The complication rate in terms of infection was 8% (one eye). Based on the results of this study, it was concluded that the Morgan's pocket technique can be considered a reliable procedure for the repositioning of a prolapsed gland of the third eyelid. This technique is easily applicable with a high success rate. Due to the low recurrence and complication rates, it can be considered a highly reliable technique.

Key words: cherry eye, dog, pocket technique

INTRODUCTION

The pathogenesis of "cherry eye" has not been determined, but it may be associated with primary or secondary adenitis, fascial attachment abnormalities, or specific pathogens affecting the glands. The condition is not caused by primary inflammation, neoplasia or hyperplasia. The hypertrophied, protruding gland, which extends beyond the leading edge of the nictitans, can become abraded and dry, resulting in secondary inflammation, and swelling. Protrusion may be unilateral, but it is often bilateral. Adenitis is found through histological examination (Fossum, 2013). Some breeds are prone to weakness in this tissue. Recent data have shown particularly high prevalence of the third eyelid gland prolapse in Cane Corso, Neapolitan Mastiffs, American Cocker Spaniels, Lhasa Apsos, and brachycephalic breeds such as: Bulldogs, French Bulldogs, Pugs and Shih Tzus (Hendrix, 2007; Mazzucchelli et al., 2012; Rais et al., 2015). It is one of the most common diseases affecting ocular attachments (Crispin, 2009). Owners notice a third eyelid mass, ocular discharge and/or conjunctivitis. The condition usually begins unilaterally, but eventually it may become bilateral (Plummer, 2008; Dehghan et al., 2012). The pathophysiology of the disease is explained by genetic predisposition and poor development of connective tissue between the base of the gland and the periorbital tissue (Kaswan and Martin, 1985; Moore, 1993; Slatter, 2001; Edelmann et al., 2013). Brachycephalic breeds have a genetically determined eyelid 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. Also, antigen stimulation and growth of the gland have been reported to be effective in pathophysiology (Maggs et al., 2012). Generally, the prolapse is encountered in young animals, especially below 1 year of age (Kaswan, 1985; Morgan, 1993). The eye usually has a persistent inflammatory reaction and may cause dry eye. The third eyelid gland provides 40 per cent of tears by many small ductules that open out on the bulbar surface of the third eyelid. If the prolapsed gland is not repositioned for a long time, reduction of the tear production, persistent irritation, enlargement of the gland, ulceration and *keratoconjunctivitis sicca* may occur (Slatter, 2001). However, because the tear production of the gland significantly contributes to the total tear amount needed by the eye, considering the dog's possible predisposition to dry eye, surgical replacement of the gland comes forward as the most reasonable therapy (Saito et al., 2001; Arora et al., 2014). The Morgan's Pocket Technique is one of the preferred methods for repositioning the gland as it is relatively easier to perform and it is proven to be effective (Crispin, 2009; Gomez, 2012; Hendrix, 2013; Yaygingul et al., 2019). The purpose of this study was to evaluate the clinical outcome and complications of the Pocket Technique in the repositioning of the prolapsed third eyelid gland in dogs.

MATERIALS AND METHODS

Twelve dogs were included in this study. The dogs are treated in the Veterinary Clinic "Dameski Veterina" Prilep between 01 October 2022 and 01 June 2023. Five cases (42%) were bilateral and seven (58%) were unilateral. In the dogs with unilateral disease, the affected eye was on the left side in 3 dogs (43%) and on the right side in 4 dogs (57%). Seven dogs were male and five were female. Breeds represented in our pool of participants included: Cane Corso (5), Beagle (2), Shih Tzus (2), Central Asian shepherd (1), Maltese (1) and mixed breed (1). The age range of dogs was between 6 months and 3 years old. All cases were treated prior to surgery for 7-8 days with a topical antibiotic tobramycin and dexamethasone, (Tobradex (3mg/1mg)/1mL, Alcon Cusi SA, Spain).

Upon reviewing their history, none of the dogs had eye problems before the appearance of a red mass on the medial canthus. The affected eye was palpated to differentiate the prolapsed gland from the cartilage eversion. Prolapse of the gland of the third eyelid was diagnosed based on their history along with physical and clinical examination.

The dogs were prepared for surgery as per the standard preoperative preparation principles of the periorbital area. Clipping the periocular area is not required. The periocular skin is scrubbed with 10% povidone-iodine solution (Betadine 10%, Alkaloid, Skopje). Exudates were removed from the corneal and conjunctival surfaces with a sterile swab, and the area was irrigated with eye wash. For all dogs the premedication was performed with medetomidine at dose of 30µg/kg IM (Dorbene, Syva S.A., Spain) while induction of anaesthesia was performed with ketamine at dose of 4 mg/kg IM (Ketamine 10%, Alfasan International B.V., Netherlands) and propofol in dose from 1 to 5 mg/kg IV (Propofol 1%, Fresenius Kabi, Austria). The dogs were placed in ventral recumbency with the affected eye facing upward on the operation table. Topically, ophthalmic solution with anaesthetic for eyes (Tetracaine hydrochloride 0,5%, Alcon) and Povidone iodine 1% (Betadine 1%, Alkaloid Skopje) eye drops were instilled preoperatively. The surgical area was draped carefully, and then palpebral fissure was opened by placing an eyelid speculum to maximize exposure. For the prolapsed gland to be replaced, the third eyelid was extended with an ophthalmology forceps, then parallel incisions of 1 cm were made through the bulbar conjunctiva ventral and dorsal to the free margin of the gland.

The gland is returned to its normal position by suturing the two incisions together over the gland using 5/0 – 6/0 resorptive monofilament suture with a simple continuous suture pattern.

For the bilateral cases, the procedure was repeated in the same manner for the second eye. After the surgical procedure, all the patients were treated topically with ophthalmic tobramycin (2x4 times/day, Tobrex, Alcon Cusi SA, Spain) for a duration of 10 days. Due to the possibility of interaction with healing of the suture line, local administration of corticosteroids was not used after the operations. A postoperative complication in terms of infection was noted in one eye due to poor owner compliance, which was successfully treated with oral Amoxicillin with Potassium clavulanate for one more week and topical tobramycin twice a day for a duration of 15 days.

RESULTS

There were 12 dogs (17 eyes) diagnosed with prolapse of the third eyelid gland and treated with using Modified Morgan pocket technique. The most frequently represented breed was the Cane Corso (42%), followed by Beagle (17%), Shih Tzus (17%), Central Asian shepherd (8%), Maltese (8%) and Mixed-breed (8%). The prolapse was unilateral in 7 cases (58%) and bilateral in 5 cases (42%). The affected eye was on right side in 10 cases (59%), and on the left side in 7 cases (41%). Gender was recorded as 7 (58%) males and 5 (42%) females. Sixty-seven percent of

the dogs were less than 1 year old, 17 % were between 1 and 2 years old, 8% were between 2 and 3 years old and 8% were over 3 years old.

Etiologically, there was no trauma or inflammation history, and the reason of the prolapse was determined to be weakness of the connective tissues which keep the gland in its anatomical position.

In the postoperative period, the dogs were controlled 2 times during an interval of 7 days and no clinical problems were detected. During the following period, phone call checks continued for 3 months and during this period, relapses of "cherry eye" were not recorded in any case. However, a post-operative complication in terms of infection was observed in one eye due to poor owner care, which was successfully treated with oral Amoxicillin with Potassium clavulanate for one week and topical Tobramycin twice a day for 15 days.

DISCUSSION

Diseases of the third eyelid are commonly encountered in dogs and prolapse of the third eyelid gland, or "cherry eye", is the most often one among these diseases (Plummer et al., 2008; Mazzucchelli et al., 2012; Premont et al., 2012). Etiological factors are not known well, however weakness of the connective tissue attachment of the gland, which can be associated with genetic disorders, is especially emphasized (Singh et al., 2017; Dehghan et al., 2018). According to databases, prolapse of the third eyelid gland usually occurs at age less than 1 year. The age distribution of dogs younger than 1 year of age with a ratio of 67% in this study was consistent with the literature.

Medical treatment or conservative local therapies including antibiotic and steroid combination in prolapsed third eyelid gland is not indicated as a solution (Arora et al., 2014; White and Brennan, 2018). It has been stated in the studies that surgery is the best option in the treatment of prolapsed third eyelid gland. Postoperative use of topical corticosteroids is recommended in some studies but also discouraged in others (Gelatt et al., 2012; Rankin, 2013). In the literature there is an inconsistency regarding the postoperative use of corticosteroids. Without repositioning and fixing, the gland tissue remains susceptible to various pathologies, and inflammation and irritation persist. Removal of the gland may cause tear secretion to be reduced by up to 40% and formation of secondary keratoconjunctivitis sicca. Therefore, partial or complete removal of the gland should not be preferred (Slatter, 2001; Singh et al., 2017; Dehghan et al., 2012). Surgical repositioning techniques are more successful than gland removal (Gelatt et al., 2012; White and Brennan, 2018). Several surgical techniques have been described for the reposition and fixation of the prolapsed third eyelid gland in dogs. The advantages of Morgan's pocket method are that it is less risky, easy to learn, and it is easily applied. In our study, all animals were treated by using modified Morgan pocket technique with 100% success rate.

Most studies mention that the male dogs are more likely to suffer from "cherry eye" than females (Mazzucchelli et al., 2012; Sapienza et al., 2014; Multari et al., 2016). The situation was similar in our study. There were more male dogs (58%) present with the "cherry eye" condition compared to females (42%). There is a possible explanation in an experimental study which was conducted by Cabral et al. (2005). They found the male mongrel dogs have longer lacrimal glands and their superficial glands of the third eyelid are thicker compared to the females. The larger size of the gland may make male dogs more predisposed than females.

Additionally, "cherry eye" is usually seen unilaterally, bilateral cases are not as infrequent. In our study, 58% of the cases (in 7 out of 12 dogs) were unilateral and any sign of "cherry eye" was not

found in the contralateral eye of these cases during the following period. The interval between the gland prolapse of the opposing eye was 2 to 5 weeks.

Brachycephalic breeds are predisposed to "cherry eye" due to the frequent formation of conjunctival inflammation because of their head anatomy. In our study, there were 7 brachycephalic dogs (58%), the remaining 5 dogs (42%) were mesocephalic.

There is always recurrence risk for the "cherry eye" patient following gland-sparing surgeries (Mazzuzzhelli et al., 2012; Multari et al., 2016; Singh et al., 2017). However, this risk can be minimized by presurgical precautions, proper surgical procedure, and attentive postoperative care. Topical antibiotics and corticosteroids for initial treatment a couple of days before surgery, postoperative local antibiotics and non-steroid anti-inflammatory agents may help to reduce the recurrence risk (Zabell, 20017).

CONCLUSION

Third eyelid gland prolapse is one of the most common third eyelid diseases in dogs. In animals that have a prolapsed gland on the third eyelid, there is a high risk of developing several ophthalmic diseases such as chronic conjunctivitis and the occurrence of eye discharge. Reduced tear production, permanent irritation of the cornea by the enlarged gland, can lead to corneal ulceration and appearance of keratoconjunctivitis sicca, or so-called "dry eye", if the prolapsed gland is left without any intervention or is not repaired properly. The diagnosis of this pathological condition is easily established based on clinical symptoms and no additional examination is required. The treatment of the protrusion and prolapse of the gland of the third eyelid is surgical and in this study, we used the modified Morgan pocket technique. The modified Morgan pocket technique is the most commonly used method today, it is simple to perform, and it is very effective. This was also confirmed in our work, where the success rate was 100% and no relapses occurred. This technique is performed quite quickly, postoperative complications are minimal, and it is quite cheaper compared to other techniques. In addition, this technique preserves the mobility of the third eyelid, preserves the glandular tissue, and this technique is especially effective in young animals and in those cases where the prolapsed gland is not very large.

Overall, the high success rate, swift animal recovery, and customer satisfaction make the modified Morgan pocket technique the surgical method of choice for repositioning a prolapsed conjunctival gland.

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