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SURGICAL REDUCTION OF EVERTED CARTILAGE AND PROLAPSED THIRD EYELID GLAND IN A THREE BASSET HOUND FAMILY WITH THIRD EYELID CONGENITAL ANOMALIES

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Abstract

Prolapse of the third eyelid occurs most commonly in dogs. The purpose of this paper was to describe the surgery reduction of everted, ectopic cartilage and prolapse of the third eyelid in a family of three Basset Hounds, in order to reposition it in anatomical position. All of these dogs presented third eyelid congenital anomalies, and one of them had a relapse after first surgery was done.
A family of three Basset Hounds, two female and one male, six months old, presented at the Ophthalmology Department of the Faculty of Veterinary Medicine in Bucharest. All three patients presented very thin and in excess conjunctiva on the outer surface of the third eyelid and ectopic everted cartilage. One patient had previously surgical correction and had a relapse of prolapsed third eyelid. We used combined surgical techniques for each patient.
While in the first two patients the surgical correction of the everted cartilage was performed approaching the conjunctiva on the outer surface of the third eyelid, in the third one the approach was done on the inner surface. After surgery the local treatment consisted in tobramycin and dexamethasone collyre three times a day, for 10-14 days.
As a conclusion, the surgery correction is different in every case and depends on the breed; the techniques could be combined in order to performe the surgery.

Key words: *Basset Hound, everted cartilage, prolapsed of the third eyelid.*

INTRODUCTION

The third eyelid can be consider a conjunctival fold with a triangular shape, that protrudes from the medial canthus and covers the eyes partially. In the thickness of the nictitating membrane is a T-shaped cartilage structure.
The cartilage has the horizontal branch which supports the free fold of the third eyelid, while the vertical branch creates support for the body of the eyelid. The structure of the cartilaj is hyaline in dogs. Associated with the third eyelid is the accessory lacrimal gland, located at the base of the vertical branch of the cartilaj of the third eyelid.
The tubuloacinar gland is localized deep to the orbital rim and it isn't visible, the excretory ducts of the gland open on the bulbar surface of the nictitating membrane and produces a mucous secretion into the conjunctival fornix. The gland and the third eyelid contribue about a 30-40% of the production of the tears, which are distributed on the corneal surface thanks to the movement of the third eyelid.
The common disorders of the third eyelid is the everted cartilage and consists of an outward folding of the vertical branch of the cartilage, after that can occur frequently the chronic conjunctivitis.
The cartilage has a basic structure in the shape of "T" different between species. In the dog the cartilage has a conical shaped base while in the cat appears broader. Histologically, in the dog the cartilage is hyaline cartilage with only a few elastic fibers in the surrounding tissues (Schlegel, 2001).
There are some diferent techniques which help us to fix this common disorder; Resection of the eyelid margin and cartilage (Martin, 1970); The temporary nictitans membrane flap, with rather limited success rate (Martin, 1970).

Radical excision of the third eyelid gland and associated gland (Khuns, 1977). This procedure is not recommended because the total removal of the third eyelid alters the mechanisms of defense by the nictitating membrane and the total amount of tears produced. Resection of the bent portion of the cartilage (Mane et al, 1990); Cartilage resection and the homograft (Wolf, 2012). This technique allows excellent morphological and functional result but requiers to use the suture material, delicate instrumentation and prolonged surgical time. Thermal cautery, this technique is very recent, appears to be fast and efficient but does not allow in general, prolapse of the gland of the third eyelid (Allbaugh et al, 2013).

Prolapse of the gland is the most frequent pathology in the nictitating membrane, commonly refered to as "cherry eye".

Also it appears as a red mass of variable size protruding from behinde the third eyelid in the medial canthus. The prolapse can be unilateral or bilateral and cronic exposer cause inflammation and an increase in volume. The pathogenesis is not yet clear (Severine, 1996), but could be a congenital weekness, or absence of the connective tissue that connects the gland to the ventral periorbital tissues, or a lymphoid hyperplasia secondary to chronic exposure in young animals and to environmental allergens (Maggs, 2008). The prolapse of the gland can occur in all breeds, rarely in cats, but some breeds have a higher risk becase of genetic predisposition: Beagles, Bloodhound, English and American Bulldogs, Shar Pei, American Cocker Spaniel, Neapolitan Mastiff and Cane Corso (Guandalini, 2012) are commonly affected. There are numerous surgery techniques to fix the prolapse of the gland, and these can be divided in two groups: procedures that provide for the anchoring of the gland to the surrounding tissues and surgeries involving the creation of a "pocket" in which the gland is repositioned. Both procedures have their advantages and disadvantages. The anchoring techniques tend to limit the mobility of the third eyelid and the techniques refered to creat a "pocket" maintain mobility of the third eyelid, but may tend to harm the bulbar conjunctiva of the eyelid and the gland's ductules. Particulary if the surgical access is performed on the posterior surface of the nictitating. Moore et al, 1994 showed that the pocket techniques do not alter tear production or morphology of the third eyelid gland excretory ductules.

MATERIALS AND METHODS

We have been studied a family of three Basset Hounds, six months old, one male and two female, which were presented at the Ophthalmology Department of the Faculty of Veterinary Medicine in Bucharest. All three patients were presented with structural abnormalities of the third eyelid. The female Abba and Allegria were with amelanotic leading edge of the third eyelid while the free edge of the third eyelid of the male Apollo was pigmented (Figure 1).

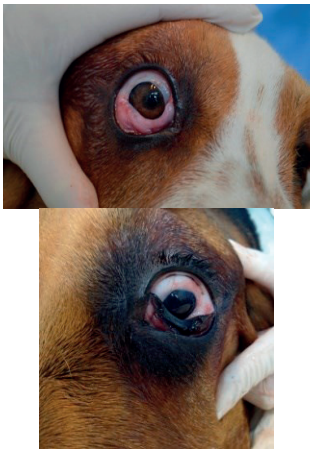

Figure 1. Amelanotic leading edge and pigmented

Also, they had in excess conjunctiva, very thin on the outher surface of the third eyelid and an ectopic everted cartilage. We performed surgery for each case in diferent way, the male was developed also everted cartilage and prolapse of the gland of the third eyelid in both eyes.

The patients are under general anesthesia with ketamine and diazepam and are put in a lateral recumbency with the affected eye up and the surgical preparation of the area are made with iodine solution 1:9 NaCl, and eyelid speculum is applied, the free edge of the third eyelid is extended anteriorly by two Mosquito forceps placed medially and laterally (Figure 2).

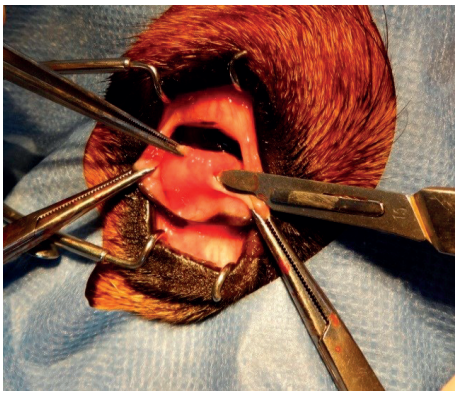

Figure 2. Two Mosquito forceps placed medially and laterally and an eyelid speculum

The approach of the bent cartilage and the prolapse of the gland were made on the bulbar conjunctiva in both eye of the male. In this way the bulbar conjunctiva can be gently dissected by a blunt cut to expose the bent cartilage than is then resected, the conjunctiva is not suture (Figure 3).

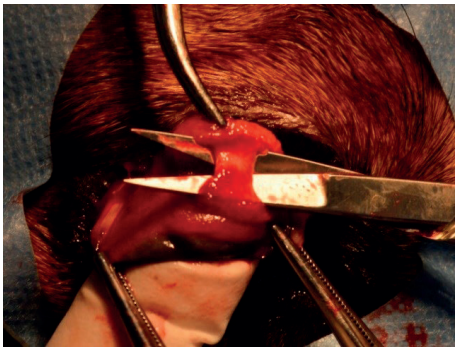

Figure 3. Exposure the bent cartilage on the inner surface of the third eyelid

In this case the eversion cartilage occurs at the junction between the vertical and the horizontal portion. After the cartilage is resected we made the surgery of the gland. On the bulbar surface of the third eyelid two incisions are made, parallel to the free margin of the nictitating membrane. First incision is in front of the gland, practicaly we continued the incision for the bent cartilage, and the second one is made behinde of the gland's base, than a subconjunctival pocket is created in which the gland is allocated, the incisions do not unite. The bulbar conjuntiva in front of the gland is very thin and aderent on the surface and the disection is made very hard.

For having a strenght suture both incisions are than continously closed starts laterally to medialy, on the palpebrale surface of the third eyelid and back (Figure 4).

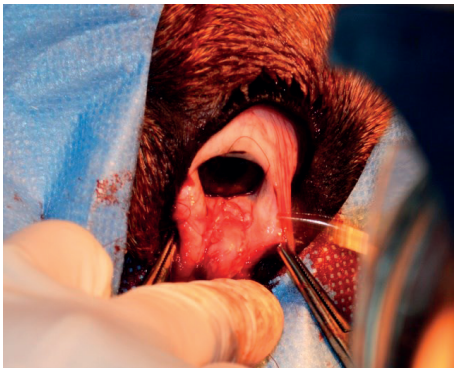

Figure 4. Reposition the gland in the subconjunctival pocket. The continously suture of the bulbar conjunctiva

For having a strenght suture, as not injury the cornea we start from lateraly to medialy and back, on the palpebrale surface of the nictitating membranean, using absorbable material 6/0 Vicryl, and taking care to leave the ends incisions open to drain the tear film. Always we replace the knot on the palpebrale surface of the third eyelid in external canthus. One of the female had affected left eye and the other one right eye. At the right eye we perfomed also the eversion of the cartilage and the surgery of the gland. The bent cartilage was exposed on the outher surface of the third eyelid (Figure 5).

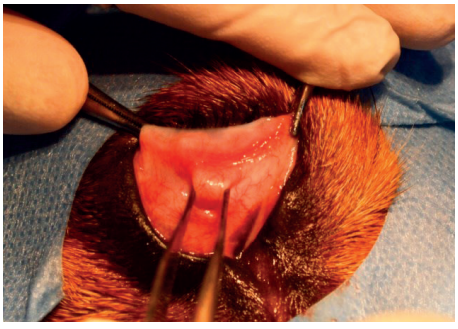

Figure 5. Everted cartilage, outer surface of the third eyelid

Two parallel incisions are made on the palpebral conjunctiva above and under the everted cartilage. The conjunctiva is dissected

to expose the cartilage, the conjunctiva is then closed with absorbable suture 6/0 (Figure 6). Before the suturing, we exposed the gland on the surface and removed about 1/3 of the gland. The gland is then placed inside the pocket on the bulbare surface of the nictitating membrane, the same technique as above.

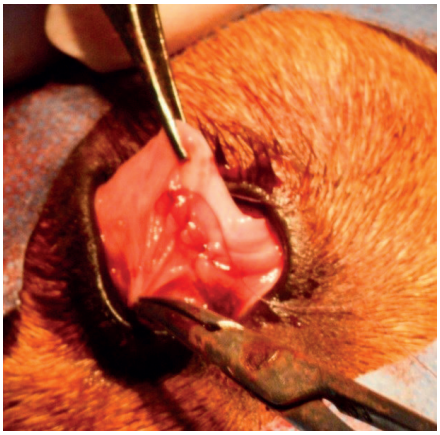

Figure 6. The suture on the outher surface after the resection of the cartilage

The other female with affected left eye, had previously surgical correction and had a relapse of prolapsed. Here we found many anomalies: the gland were placed in an oblique position as the free margin, the vertical portion of the cartilage seems to be medialy than centraly of the eyelid, the outher surface of the third eyelid was very thin and an excess of the conjunctiva. Until we performed the surgery of the cartilage and gland, we resected about ¾ of the horizontal branch of the cartilage on the inner surface. The techniques were the same.

RESULTS AND DISCUSSIONS

A three Basset Houns family dogs six months older with prolapse of the third eyelid and everted cartilage, unilaterally and bilaterally. A recent study (Edelman et al, 2013) shows that the inheritance of prolapse in a significant number of dogs has not been concluded. The disease may have a genetic basis in the Shorthaired Pointer (Martin, 1970).

This article confirmed the involvement of genetic risk factors in the pathogenesis of the disease. Dogs are more affected within the first two years of age and in the above mentioned breeds often bilaterally, not always at the same time. In unilateral presentation, the contralateral eye is often affected over a period of 2-3 months. The result of studies over the years have confirmed the important role of the glande in the tears production (Chang & Lin, 1980; Helper et al, 1974). Nowadays, surgical repositioning is considered standard of care. Usually the eversion occurs at the junction between the vertical and the horizontal portion, which appears to be the weakest portion of the entire structure of the cartilaginous support of the nictitating membrane. The everted cartilage could be approach differently depending on the case.

The most accredited etiology states there is a difference in the growth rate between the anterior and posterior portions of the cartilage, with the posterior growing faster, thereby resulting in a forward bending direction.

It is good to know that the eversion of the cartilage can be associated with the prolapse of the eyelid and vice-versa.

The scope of the surgery is to replace the gland into anatomical position, to resect the everted cartilage, even if is not everted. A study made by Morgan et al, 1993, suggested that dogs which had been treated to surgical repositioning had a lower incidence of KCS compared to those who had not been treated or had undergone removal of the gland.

Figure7. The third eyelid, after the repositioning

In our study the cornea was not affected, and after the surgical repositioning the third eyelid looked normaly in the medial canthus, except

one of the case, the female Abba which the conjunctiva appeared very wavy (Figure 7, 8).

Fifure 8. Abba after the surgery. The conjunctiva appeared very wavy and with edema

CONCLUSIONS

We should make a differential diagnosis between the everted cartilage and prolapse of the nictitating gland, because both occur to be like a abnormal protrusion at the medial canthus. A simple dorsolateral traction of the third eyelid could help you to put the certain diagnosis.

Always we replace the knot on the palpebrale surface of the third eyelid in external canthus in the surgical repositioning of the gland.

For having a strenght suture, as not injury the cornea we start external to internal and back, keeping the ends incisions open to drain the tear film.

After the surgery, in the postoperative period is prescribed colir with Tobramicyn and Dexametasone for 14 days, and the Elizabethan collar is not necesary.

The success of the surgery is relying on combining different surgical techniques.

REFERENCES

1. Adolfo Guandalini, 2014. The third eyelid-Pathologies of surgical interest proceeding from ECVO Conference 2014 in London.
2. Allbaugh RA, Stuhr CM., 2013. Termal cautery of the canine third eyelid for treatment of cartilage eversion. Veterinary Ophthalmology, 16(5): 392-5.
3. Cazacu P.,Cotea C., 2007. Morphologic and micrimorphometric characteristics of the third eyelid and nictitating gland in the dog.
4. Crispina, S., 2005. Notes on Veterinary Ophthalmology, (1st ed., pp. 74-94).
5. Gelatt KN & Gelatt JP., 2011. Surgical procedures for the conjunctiva and the nictitating membrane. Veterinary Ophthalmic Surgery 157-190.
6. Ionascu I., 2013. Atlas of Veterinary Ophthalmology. (Iuliana Ionascu, Ed). Curtea Veche, Bucharest.
7. Martin, L. C., 2005,2010. Ophthalmic disease in veterinary medicine, (softcover ed., pp. 145-179). Manson Publishing Lthd.
8. Petersen- Jones, S., Crispin, S. BSAVA Manual of the Small Animal Ophthalmology. (S. Petersen-Jones, S. Crispina, Ed.) (2 nd ed., pp 78-105). Wiley- Blackwell.
9. Petru C. P., 2013. Cytological study of the normal nictitating gland in dogs, 56, ½: 91-96.
10. Petru C. P., 2013. Ultrastructural study of the nictitating gland in dogs 56, ½: 86-90.
11. Stade F.C., Wyman M., Boeve M.H., Neumann W., Spiess B. 2007. Ophthalmology for the Veterinary Practitioner. (2nd., pp. 73-103).
12. Turner S. M., 2005. A Manual for Nurses and Technicians. Specialis ophthalmic procedures(Sally, M. Turner, Ed).