

When Hairs Meet the Eye



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In this article we look at the effects that two common eyelid abnormalities have on the eye - one due to an abnormal eyelid conformation, the other due to abnormal hair growth in what may otherwise be normal lids. Unfortunately many of the conditions we see in domestic species and especially in dogs are due to years of selective breeding for a variety of traits considered desirable for a particular breed - one unintentional consequence of which is the development of conformational abnormalities or inherited abnormalities of the eyelids which can negatively impact ocular structure and function.

Medial Canthal Entropion and Trichiasis (MCET)

Many of the eyelid and cilia abnormalities in dogs and cats stem from breeding for an extreme form of brachycephalism. As the skull has

become shortened the facial skin has not correspondingly been reduced - this results in the formation of large nasal folds of haired skin. Hair on the nasal folds may impinge on the eye and cause problems in some dogs. As the facial skin is pushed towards the eye there is a tendency for the lower eyelid to roll against the eye (entropion). This is usually compounded by tight attachment of the medial canthus (the location where the upper and lower eyelids join on the nasal side of the face) to the underlying bone via the medial palpebral ligament. The net result is a rolling of the medial part of the lower (and occasionally upper) eyelid such that normal eyelid cilia contact the conjunctiva or cornea. In addition many affected animals have cilia which grow from the anterior surface of the medial palpebral conjunctiva (this area in people is referred to as the conjunctival caruncle although a discrete structure is rarely evident in animals). These cilia also contribute to medial corneal irritation in many dogs.



The effect of this irritation on the eye varies from animal to animal. In cats irritation from the lower eyelid cilia may contribute to the formation of chronic ulceration and formation of corneal

sequestra. In some dogs we see corneal vascularization and medial corneal pigmentation as a result of the chronic cilia irritation. This pathology is often compounded by the abnormally large palpebral fissure (macroblepharon), the shallow orbit which limits the extent to which the eye can be retracted and the lids closed over the cornea, the extreme rounded (rather than elliptical) shape of the upper and lower eyelids around the medial canthus which may reduce the effective medial corneal coverage during blinking, and in some dogs reduced tear secretion from the lacrimal glands (keratoconjunctivitis sicca). All of these factors (and probably some that we don't yet understand) contribute to the development of keratitis. In dogs with good tear production the corneal changes (vascularization, scarring and pigmentation) may be limited to the medial cornea where cilia contact the eye. In dogs additionally affected with low tear production, reduced corneal sensitivity and reduced coverage of the eye when blinking, the corneal pathology is more diffuse - often resulting in widespread corneal pigmentation even at an early age.

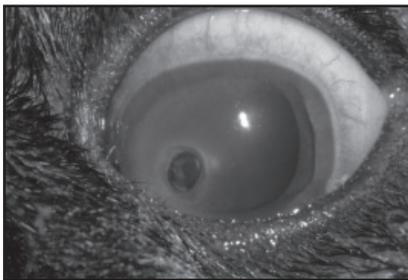
(continued on page 2)

INSIDE THIS ISSUE:

Scientific Article.....	Pg 1-3
News & Events.....	Pg 4
CERF Corner.....	Pg 5
Memo to Managers.....	Pg 6



Some dogs may go their entire life without any significant signs (at least as perceived by the owners) of ocular discomfort or development of more severe corneal lesions. It is likely that the chronic reactive scarring and pigmentation “protect” the cornea against development of more severe corneal pathology (ulceration) in many animals and reduce the sensitivity of the medial cornea. However some dogs and cats develop more severe ocular lesions due to cilia contact medially. I have seen dogs and cats of all ages with severe corneal ulceration associated with medial canthal entropion and trichiasis.



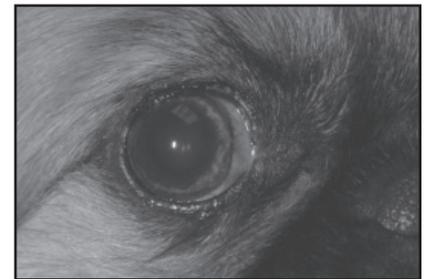
Chronic irritation of the cornea damages the corneal epithelial surface layer. If erosions and superficial ulcers occur, bacteria may proliferate in the deeper corneal stromal tissue - the release of enzymes from inflammatory

cells (especially polymorphonuclear leukocytes entering the tear film in response to infection) as well as bacteria and degenerating corneal epithelial cells causes rapid breakdown of the corneal tissue (keratomalacia) and in extreme cases perforation of the eye.

The treatment of medial canthal trichiasis and entropion depends on how severely the lids are deformed and the extent of corneal pathology. In any of these cases, medical treatment for any identified reduction in tear production with corneal desiccation is important. Medical treatment involves use of cyclosporine or tacrolimus to increase tear production, antibiotics to control bacterial infection and application of artificial tear preparations to moisten the corneal surface. Corticosteroids should be used very cautiously or not at all so long as cilia are abrading the corneal surface. Surgical treatment can be divided into efforts to reduce the cilia contacting the ocular structures and correction of the eyelid malformation itself. In mild cases of medial trichiasis, the eyelid hairs can be treated with cryotherapy – a double freeze thaw cycle with a 3-4mm ophthalmic cryoprobe applied over the palpebral conjunctiva to destroy hair follicles. This also results in eyelid depigmentation, although repigmentation occurs over a few months.

Various surgical techniques have been described which aim to correct the medial eyelid entropion and remove the cilia which contact the eye. The usual elliptical (Hotz-

Celsus) types of excision often are difficult to perform in a way that actually corrects the problem at this location. The most effective approach is one in which the lid margins are incised just medial to the nasolacrimal puncta and a strip of lid margin is excised, continuing the incision in an arrowhead shape medial to the medial canthus. This dissection is necessarily performed with high magnification under the operating microscope in order to identify the areas with hair follicles which need to be excised and in order to avoid damage to the nasolacrimal puncta (especially lower) and the underlying nasolacrimal duct. If the medial palpebral ligament is very tight it may be necessary to relieve the tension slightly - this has to be done with extreme care to avoid damage to the nasolacrimal duct. Hair extending onto the conjunctiva at the medial canthus or arising from the palpebral surface of the third eyelid medially are also excised. The upper and lower eyelids are then re-apposed just medial to the puncta – a medial tarsorrhaphy.



In some extreme cases of macroblepharon a partial lateral tarsorrhaphy may also be created to reduce overall corneal exposure. Modifications have also been described to increase support during healing which involve creating a bridge of palpebral conjunctiva from the lower eyelid which is sutured into a pocket created in the upper lid between the skin and orbicularis muscle and tarsoconjunctival inner lining of the lid. Depending on the extent of the correction, in some cases, the upper nasolacrimal punctum may be occluded as part of this surgery – rarely would this be

Editor's box

Ocular Outlook

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a problem since the upper punctum contributes less than the lower punctum to tear drainage. Because many brachycephalic dogs with medial entropion also have low tear production and increased tear evaporation, any reduction of tear drainage might actually be beneficial.

In more extreme cases the medial blepharoplasty is combined with surgical removal of part or the entire nasal fold when either the fold is contributing to the medial lower eyelid entropion or nasal fold cilia are also rubbing on the corneal surface. Since owners are often concerned about the cosmetic alteration when removing the fold I usually try to remove only the anterior half of the fold in order to preserve some of the brachycephalic facial appearance. The incisions are sutured in such a way that the nasal fold is rolled away from the lower eyelid which directs cilia on the fold further away from the corneal surface.

Distichiasis and Ectopic Cilia

Cilia which arise from the Meibomian glands are referred to as distichia when they emerge from the openings of the gland at the eyelid margin or ectopic cilia when they emerge through the conjunctiva on the posterior surface of the eyelid. We see these conditions commonly in many breeds of dog (where presumably they are inherited), and with slightly less frequency in cats and horses. In each case the cilia have a follicle located near the base of the meibomian gland. Distichia may arise as fine hairs from the eyelid margin and float in the tear film. In some breeds this appearance is very common (for instance the Cocker Spaniel). If the hairs are very fine and not numerous they may cause few clinical signs (possibly only slightly increased tearing).



With more firm and stout cilia, the hairs may cause conjunctival and cornea irritation or ulceration. Treatment of these hairs by cutting or plucking is not recommended in most cases due to their tendency to re-grow from the remaining follicle. Each time distichia are trimmed there is a tendency for them to regrow as thicker and more troublesome hairs with resultant corneal disease. The irritation from the hairs causes increased lacrimation, conjunctivitis and in some cases corneal ulceration (which may be compounded due to self trauma). In some breeds (for instance the Weimaraner shown below) the cilia often present as numerous short stout hairs along a considerable length of the eyelid margin. Cilia abnormalities may be seen at any age but are usually present in young animals and will persist unless treated appropriately.



Ectopic cilia may coil in the Meibomian gland and subconjunctival tissue and be associated with accumulations of lipid in the sebaceous glands.



If the hairs begin to protrude through the conjunctival surface they usually cause severe corneal irritation and development of chronic non-healing corneal ulcers which may become deep or form exuberant granulation at the corneal surface. These are always very painful. Shih Tzus are

a breed commonly affected with a multiplicity of eyelid cilia disorders.

Treatment of distichia is most effectively performed with cryotherapy to destroy the follicle at the base of the Meibomian gland. When viewed under the operating microscope the location of the cilia can easily be seen and a double freeze thaw cycle applied with a fine ophthalmic cryoprobe over the follicle at the base of the gland. Cilia



can then be epilated at the time of surgery or a few days later.

Ectopic cilia can be treated with a combination of local excision (using high magnification to identify cilia coiled beneath or protruding through the conjunctival surface) and cryotherapy. I find that reliable identification of these cilia almost invariably requires examination of the lids under the operating microscope – even the magnification provided by a slit lamp biomicroscope in the conscious animal may fail to identify some ectopic cilia. Various other surgical approaches have been recommended for treating distichia and ectopic cilia - many of them are more traumatic and less effective than cryotherapy and some may result in considerable scarring of the eyelids and permanent damage and destruction of the eyelid sebaceous glands. Laser treatment seems to offer little advantage (and is more costly) than cryotherapy.

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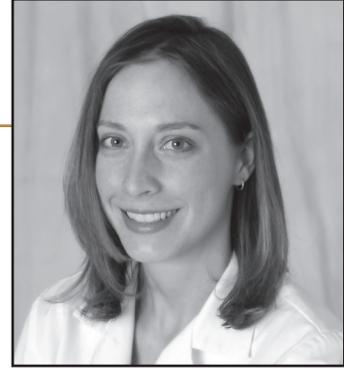
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CERF CORNER



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Prolapse of the Gland of the Third Eyelid

The gland of the third eyelid contributes approximately one third of the total tear production. Prolapse of this gland is the most common condition affecting the third eyelid. It is most likely to occur in Cocker Spaniels, Lhasa Apsos, Pekingese, and English Bulldogs. Although the pathogenesis of this disorder is not fully understood, it is believed to be the result of weak connective tissue attachments between the gland of the third eyelid and the periorbital tissues. Prolapse of the gland of the third eyelid usually occurs in young dogs (<2 years) and occasionally in cats. It can be either unilateral or bilateral and is diagnosed by its characteristic clinical appearance, which has led to the name “cherry eye.”



Surgical repositioning of the gland is the recommended treatment. Studies have shown that dogs treated with excision of the gland or those that remained untreated were more likely to develop keratoconjunctivitis sicca (KCS) than those that underwent surgical repositioning of the gland. However, some breeds predisposed to prolapse of the gland of the third eyelid are also breeds predisposed to KCS, so repositioning of the gland does not guarantee that the dog will not develop KCS in the future. Surgical repositioning of the gland has a 90-95% success rate, with re-prolapse occurring more commonly in cases with concurrent bent

third eyelid cartilage, more severe inflammation and/or vascular congestion and swelling of the gland pre-operatively.

The Morgan pocket technique is probably the most popular repositioning technique, although other types of anchoring procedures may be performed on more difficult cases. Care must be exercised to avoid placing suture material, and especially suture knots, on the bulbar surface of the third eyelid in a manner that will lead to corneal ulceration. Small, absorbable suture material, magnification, and post-operative use of an Elizabethan collar are recommended for most procedures and referral to a specialist should be considered for more complicated cases or cases of re-prolapse. Complications can include re-prolapse of the gland, wound dehiscence, infection of the surgical site, and/or corneal ulcerations.

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MEMO TO MANAGERS

ARE YOU READY TO RECEIVE FAIR AND OBJECTIVE FEEDBACK FROM MEMBERS OF YOUR TEAM?

It's hard to believe that year end 2010 is just around the corner and many of you will be involved in the annual employee performance appraisal process. If you are looking for a way to obtain fair and objective feedback from peers, subordinates, and supervisors, consider using a 360 Degree Assessment performance appraisal tool which allows for multi-rater feedback. And, to ensure you are receiving honest feedback protect the identity of the individual providing feedback. Make sure those who are providing feedback know that this process is strictly confidential and their names will not be associated with the feedback provided to the individual being evaluated. When using this process it is best to make sure no less than 3 individuals anonymously evaluate the individual. The 360 Degree evaluation provides for an honest assessment of how the employee's performance is viewed by others. It's also best to have one individual in your Practice coordinate the effort.

The person being evaluated should be open to considering all feedback provided and view the information as a "continuous process improvement" process. Be open to receiving both positive reinforcement along with constructive criticism that may point out areas to improve upon. The 360 Degree Assessment can point out blind spots that individuals, team members, doctors or managers cannot see about themselves. Human Resource and consultant experts say that the 360 Degree Assessment process allows individuals to improve the way they do their job responsibilities, which in turn creates greater harmony and better productivity in the workplace. This type of feedback helps individuals to identify strengths they can build upon and identifies skill gaps or shortcomings that can be improved upon.

Are you ready to receive some fair and objective feedback from members of your team? Give the 360 Degree Assessment a try!



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Chief Operations Officer
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