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LID SPLITTING AND POSTERIOR LAMELLAR CRYOTHERAPY FOR CONGENITAL DISTICHIASIS AND TRICHIASIS IN DOG

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Abstract

Various surgical techniques have been proposed for treating distichiasis in dogs. A technique involving eyelid splitting and double freeze-thaw cryotherapy with anterior lamellar recession was evaluated. A 3 year old, female, Staffordshire bull terrier was referred for bilateral distichiasis. There were bilateral multiple distichiasis of the upper lids, more severe on the right lid with double row of cilia and two cilia on the lower lid. Under general anaesthesia, the eyelid margin was split at the gray line and a cryoprobe was used to freeze the posterior lamella. A double freeze-thaw technique was applied in both eyes. Anterior lamellar recession was performed to prevent postoperative entropion with trichiasis. The anterior and posterior lamellas were sutured with a 6/0 Vicryl suture. Bilateral upper eyelid edema was noted postoperatively. A month follow-up revealed increased bilateral granulation and depigmentation and the recurrence of one follicle on the right upper lid. Five months postoperatively there was no recurrence in the left eye but three cilia were detected in the right upper lid. The follicles have regrown due to incomplete destruction of the roots. Lid margin split with cryotherapy is an effective method for treating distichiasis but might require several attempts and increase in the cryotherapy time.

Key words: *cryotherapy, distichiasis, eyelid splitting*

INTRODUCTION

Distichiasis represents the presence of one or more extra cilia or eyelashes arising from the free eyelid margin. They usually arise singly or with two or more hairs from the meibomian gland duct openings [1–4]. Distichia appear to develop from the ectopic hair follicles present in the tarsus as a result of an anomaly of hair follicles morphogenesis in the mesenchymal tissue of the tarsal plate. [5] Histological examination of the excised samples showed that the cilia result from metaplasia of tissues in or around the meibomian glands.[6]

Clinical signs associated include blepharospasm, epiphora, conjunctival hyperhaemia and occasionally corneal ulceration [1].

The condition is usually present bilaterally [1] and it may be inherited in many breeds with an unknown mode of transmission. Predisposed breeds include the Cocker Spaniel, English bulldog, Poodle, Boxer, St Bernard, Golden Retriever, Daschschund, Alsatian, Jack Russel Terrier, Bedlington terrier, Shetland sheepdog, Yorkshire terrier and the Pekingese [1,2].

Treatment consists of either temporary removal by manual epilation or permanent destruction by diathermy electroepilation, electrocautery, high frequency radiohyperthermia, electrolysis, cryotherapy and various surgical procedures [1]. Surgical techniques to remove or redirect the distichia follicles include partial resection of the distal tarsal plate, eyelid split, transpalpebral conjunctival dissection, Celsus-Hotz repositioning with various limitations [1,6,7].

In humans, surgical procedures have been developed to excise the distichia and follicles. These methods usually divide or split the entire eyelid skin and orbicularis oculi muscle from the tarsus and palpebral conjunctiva from the distichia follicle excision site to the conjunctival fornix. The wound is usually left open to heal by secondary intention.[1,6,7]

For the treatment of canine distichiasis was found cryotherapy non-invasive and with limited complications. A nitrous (N2O) cryounit is required and a double freeze-thaw cycle is sufficient to destroy the follicles with minimal damage to the eyelid margin.

MATERIALS AND METHODS

A 3 year old Staffordshire bull terrier neutered female presented to the Ophthalmology Service at the Animal Medical Centre for evaluation of chronic bilateral ocular discharge and blepharospasm.
Initial ophthalmic examination revealed mild corneal oedema and bilateral distichiasis was diagnosed by adequate illumination and magnification.
There were bilateral multiple distichiasis of the upper lids, more severe on the right lid with double row of cilia and two cilia on the lower lid (Figure 1). Mild corneal oedema and vascularization was due to irritation caused by distichia.

Figure 1 Upper and lower distichiasis

Under general anaesthesia, the eyelids were prepared with a 1% povidone-iodine aqueous solution. A preoperative injection of carprofen was given to reduce postoperative swelling.
A Desmarres chalazion clamp with screw lock was placed on the eyelid (Figure 2). The eyelid was grasped and held during cryotherapy by the chalazion clamp and the margin was split at the grey line using a Beaver No. 6500 microsurgical blade.

The cryoprobe was applied to the conjunctiva overlying the meibomian glands that contained the cilia. The iceball was observed under the microscope as it advanced over the line of gland openings and froze the posterior lamella. Double freeze-thaw cycles were applied bilaterally. Anterior lamellar recession was performed to prevent postoperative entropion. The anterior and posterior lamellas were sutured with a 6/0 Vicryl suture.
Topical treatment with antibiotics and corticosteroids postoperatively was initiated to minimize eyelid swelling and reduce scarring.

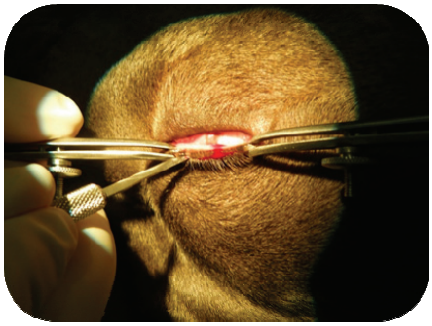

Figure 2. The eyelid was stabilized and everted using a Desmarres eyelid clamp and an incision was made at the grey line

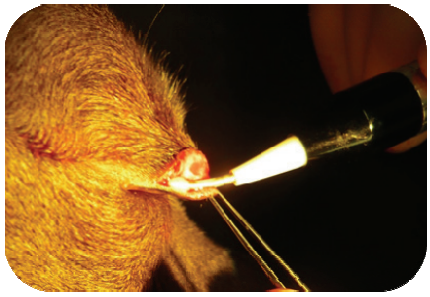

Figure 3. Cryodestruction of multiple distichiae in the conjunctiva-tarsal plate

Figure 4. Cryotherapy complete prior to suture of the anterior and posterior lamellas

RESULTS AND DISCUSSIONS

Bilateral upper eyelid and conjunctival edema was noted immediately postoperatively and lasted for two days. Systemic antiinflammatories were continued for the next week to reduce the swelling. Depigmentaton of the eyelid margin was noted after three days.

A month follow-up revealed increased bilateral eyelid scarring and focal depigmentation and the recurrence of one follicle on the right upper lid. Five months postoperatively there was no recurrence in the left eye but three cilia were detected in the right upper lid. The follicles have regrown due to incomplete destruction of the roots.

Studies showed a recurrence of 10-30% following all the distichia techniques due to complications associated with inadequate excision, eyelid fibrosis, depigmentation of the eyelid margin after cryotherapy [1].

In a study of distichiasis treatment in man including epilation, lid margin cryotherapy and eyelid splitting followed by cryotherapy to the posterior lamella the latter had shown improved ocular signs with no recurrence in 87% of the cases [8,9,10]

Eyelid splitting was associated with follicular extractions or via monopolar cautery for trichiasis and distichiasis in man with no postoperative complications [7] or the alternative technique of folliculectomy with anterior lamellar recession with 69.2% rate of success [4]

The lid margin is split at the grey line and a cryoprobe is used to freeze the posterior lamella. [8] A double freeze-thaw technique is applied, initially the time taken to register -20 C then followed by a slow thawing before re-freezing. The anterior and posterior lamellas are then sutured with a 6/0 knot vicryl suture. Anterior lamellar recession prevents the postoperative entropion with trichiasis.

Complications include eyelid edema, incomplete destruction of the roots probably secondary to inadequate temperature or duration of the freeze.[2,8–11]

CONCLUSIONS

Various surgical techniques were proposed for treating this condition.

A technique that involves eyelid splitting and double freeze-thaw cryotherapy with anterior lamellar recession was described in man with no recurrence in a one year follow-up.[12]

The technique was used in this case where the eyelid is divided along the gray line and followed by cryotherapy on the posterior lid lamella.[6]

Lid margin split with cryotherapy is an effective method for treating canine distichiasis but might require several attempts and increase in the cryotherapy time.

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