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Modified Holtz-Celsus technique for surgical correction of bilateral entropion in three Chow chow

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Abstract

Three chow chow breed dogs were presented to the Department of Veterinary Surgery and Radiology, Kamdhenu University, Anand with bilateral blepharospasm, epiphora, and reduced food intake. Ophthalmic examination revealed it to be due to bilateral entropion. Surgical management of this condition along with medicinal management resulted into fruitful outcome.

Keywords: Bilateral entropion, Chow chow, modified Holtz-Celsus

Introduction

Entropion is the inward rolling of the eyelid margin in which upper eye lashes rubs cornea causing continuous irritation and corneal ulcer. The defect usually occurs as a congenital condition and is predisposed by confirmation of the skull, narrow palpebral fissure, excess skin folds and orbital anatomy. These predisposing factors result in differences in the tension of orbicularis oculi muscles causing upper and lower entropion. Depending on the degree of tilt at the level of eye lid margin it can be classified as mild (45°), moderate (90°), and severe (180°). When this condition is aggravated by upper eyelid trichiasis, subsequent irritation on the conjunctiva and cornea leads to corneal pathologies (Lakshmanan and Chandrasekara, 2022) [3]. Initially there is epiphora, followed by corneal epithelial loss, ulceration and perforation. In chronic cases scarring and pigmentation are seen. The breeds which are more commonly affected are Chow Chow, Shar-Pei, Rottweiler, Blood hound, and to some extent old English Cocker Spaniel as they tend to lose elasticity in their facial skin. (Petersen *et al.*, 2002) [4]

Entropion can be surgically managed by Hotz-Celsus method, which involves the excision of a crescentic area of eyelid skin and underlying orbicularis muscle adjacent to the area of eye lid margin to bring it back to a normal position (Read and Broun, 2007) [5]. Various adaptations of the Hotz-Celsus procedure provide a definitive surgical correction for entropion. Modification of the Hotz-Celsus procedure is performed when entropion affecting both the upper and lower lateral lids along with lateral canthus, Make a U-shaped resection around the lateral canthus staying 3 to 5 mm from the eyelid margin. (Fossum, 2018) [2]. In present report successful correction of bilateral entropion by modified Hotz-Celsus method in three chow chow breed dogs is kept on record.

Case History and Clinical Observations

Three chow chow breed dogs were presented to the Department of Veterinary Surgery and Radiology, Kamdhenu University, Anand with bilateral blepharospasm (figure 1), continuous lacrimation, and reduced food intake. On physical and haematobiochemical examination all the physiological, haematological and biochemical parameters were found within the normal limits. Ophthalmic examination reveals increased Schirmer Tear Test (STT) value (averaging 22 mm/30 seconds) and Fluorescein Dye Test (FDT) was negative in all eyes, epiphora and blepharospasm was observed in all eyes, corneal melanosis (figure 2) and corneal opacity was observed in one case in Right eye. The condition was diagnosed as bilateral entropion and was decided to correct the condition surgically by using modified Hotz - Celsus technique as described by Fossum (2018) [2].



Fig 1: Inward rolling of eyelid and blepharospasm



Fig 2: Corneal melanosis in right eye

Surgical Management

The dogs were premedicated with inj. atropine @ 0.04 mg/kg body weight and inj. Xylazine hydrochloride @ 1 mg/kg body weight followed by inj. butorphanol tartrate @ 0.2 mg/kg body weight intramuscularly. General anaesthesia was induced with a mixture of ketamine and midazolam 2:1 (v/v) “to effect” intravenously and anaesthesia was maintained with isoflurane at 2% in oxygen. The periocular area was prepared and scrubbed with chlorhexidine solution.

Proper assessment for skin incision was done by quantifying the degree of entropion. A skin incision using BP blade no. 11 was given approximately 3-5 mm distal and parallel to the whole lower eyelid starting from the medial to the lateral canthus. The second skin incision was made parallel to the first incision in a crescent shape after a proper assessment of the excess skin fold to be removed. The crescent shape skin flap was excised. Make a second, crescent-shaped skin incision on the upper eyelid and remove the strip of skin. Both upper and lower Crescent-shaped incision meet on the lateral canthus (figure 3). The skin incision edges were opposed by monofilament polyamide number 3-0 in simple interrupted suture pattern keeping the knot on the far end of the eyelid margin (figure 4).

Postoperatively all three dogs were treated with inj. ceftriaxone + tazobactam @ 25 mg/kg intramuscularly for three days, topical application of neomycin ophthalmic ointment at the suture site for 10 days. In one cases where corneal melanosis was observed it was managed by topical cyclosporine eye drops (1.5%) three times a day. To avoid self-injury, an Elizabethan collar was advised for two weeks. After twelve days of surgery, the sutures were removed (figure 5). Excellent recovery was observed, and no complication was recorded up to three months following the treatment.



Fig 3: After removing the incised skin with curved tenotomy scissors



Fig 4: The skin incision edges were opposed by simple interrupted suture pattern

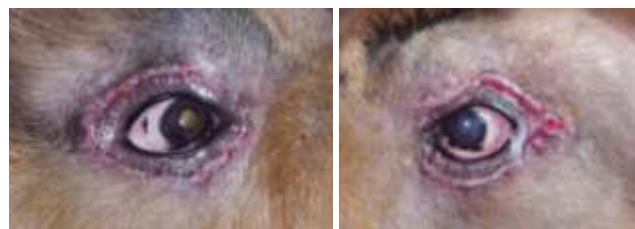


Fig 5: Photograph of recovery on 12th postoperative day without any complication in both eye

Discussion

Similar ocular findings were reported earlier like an inversion of the eyelid (Anoop *et al.*, 2021) [1]. The breeds prone to entropion include Chow Chow, Saint Bernard, English Bulldog, Great Dane, Bull Mastiff. The blepharospasm and continuous lacrimation were the most common clinical signs recorded in majority of the studies (Stuhr *et al.*, 1997) [6]. Similar Chow Chow breed presented in present report with identical clinical sign. Increased STT value in present study were appreciated clinical sign like continuous lacrimation. In our study we found corneal melanosis in one cases (right eye). Maggs 2008 stated that corneal melanosis occur due to chronic irritation of corneal due to exposure and frictional irritation due to distichiasis, entropion, nasal skin folds etc. The Hotz-Celsus technique for correction of entropion is used widely since this technique is simple to perform and has a very high success rate. (Read *et al.*, 2007) [5]. However, in the present report, the modified Hotz-Celsus technique was done for correction of bilateral entropion affecting both the upper and lower lateral lids along with lateral canthus which are common in Chow Chow. Similar statement stated by Fossum, (2018) [2] for dog with upper and lower eye lid entropion.

Conclusion

The modified Hotz-Celsus procedure is a novel surgical technique for the correction of entropion in dogs with severe inward rolling of upper and lower eye lid.

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