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Developmental bilateral entropion in a cocker spaniel and its surgical correction by mid-line rhytidectomy and modified hotz-celsus technique

M Sravanti, Basiri Dinesh, Lella Lokesh and Gangaarapu Anusha

Abstract
A 7-month-old male Cocker spaniel dog weighing about 5 kgs was presented to Veterinary Clinical Complex, Rajendranagar, PVNRTVU with the history of inversion of both upper eyelids, loose skin folds over the forehead region and cautious walk. On physical examination, dog was timid, reluctant to walk, excessive facial folding's over the frontal region were noticed that resulted in drooping of eyelids bilaterally and eventually impaired the dog vision. On ophthalmic examination, ocular reflexes, sclera were normal with serous ocular discharges, keratitis and conjunctivitis. Therefore, the case was diagnosed as developmental bilateral entropion and surgical correction was performed under general anesthesia using mid-line rhytidectomy followed by modified hotz-celsus technique. The details of the surgical procedure and recovery will be discussed in detail.

Keywords: Developmental entropion, ocular examination, mid-line rhytidectomy, modified hotz-celsus technique

Introduction
Entropion is an ophthalmic affection defined as inward rotation of eyelid margins resulting injuries to eyeball and their associated structures. Various factors like anatomy of the eye, age, heredity, trauma, physiological and pathological conditions, faulty surgical interventions predispose for the occurrence of entropion. Abnormal ratio of eyeball size and orbital fossa, congenital or acquired microphthalmia, long palpebral fissure and tarsal plate abnormalities are the various anatomical abnormalities resulting in entropion [1]. Excessive skin folds over the forehead region are commonly noticed in certain dog breeds such as shar-pei and may also be found due to old age. Inversion of eyelids results in abnormal deviation of eyelashes resulting in irritation to cornea and conjunctiva and eventually results in epiphora and ulceration [2]. Painful ocular diseases such as ulcerative keratitis, distichiasis and conjunctivitis causes blepharospasm resulting in Spastic entropion. Previous faulty surgery, injury or chronic inflammation of eyelids (acquired lid deformities) results in cicatricial entropion [3]. Among obese dogs when they suddenly lose weight results in saggy skin folds over the body due to loss of collagen and elastin, essential for skin firmness. In geriatric dogs, excessive loose skin folds over the forehead results weight over eyelids and ultimately inversion. The present case describes the surgical correction of developmental bilateral entropion in a geriatric cocker spaniel dog.

Materials and Methods
A 7-months-old male Cocker spaniel dog weighing 5 kgs was presented with a history of inversion of both upper eyelids, loose skin folds over the forehead region and cautious walk. On Physical examination, dog was timid, reluctant to walk, excessive facial folding's over the frontal region were noticed that resulted in drooping of eyelids bilaterally and eventually impaired the dog vision. Ophthalmic examination revealed bilateral entropion (Fig. 1, 2) with normal ocular reflexes, negative fluorescein dye test, increased Schirmer tear test value. Sclera was normal. Epiphora, keratitis and conjunctivitis were observed bilaterally. All the physiological parameters were within normal range.
Based on the physical and ophthalmic examination, the condition was diagnosed as developmental bilateral entropion and was decided to correct it using mid-line rhytidectomy and modified Hotz-celsus technique.

Surgical Procedure

Prior to the anesthesia the area of forehead region to be removed was marked (Fig. 3). The dog was premedicated with inj. atropine sulphate (@ 0.02 mg/kg, SC) and induction was done with combination dose of inj. xylazine (@ 1 mg/kg, IM) and inj. Ketamine (@ 10 mg/kg, IM) and maintenance of anesthesia was done by inj. Propofol (@ 4.4 mg/kg, IV) to the effect. To maintain asepsis, the periocular area of both the eyes and forehead region were carefully shaved and scrubbed using diluted povidone iodine solution. The dog was positioned on sternal recumbency and the loose skin folds (starting from medial canthus of eyes to caudal portion of nuchal crest) were raised enough into a longitudinal fold to evert the upper eyelids and fixed using allis tissue forceps and artery forceps. Electro-cautery was used to remove the excess skin folds. The resulting ellipsoidal defect (Fig. 4) is closed in a standard manner. Continuous subcuticular suture pattern and horizontal interrupted suture pattern (Fig. 5) were used to suture the subcutaneous tissue and skin respectively. Then dog was placed on lateral recumbency with left eye in upmost position. A linear skin incision was taken parallel to the upper eyelid (from medial canthus to lateral canthus) followed by a crescent shaped skin incision parallel to the first incision was taken. The crescent shaped flap of skin along with orbicularis muscle was excised carefully. The incised skin edges were opposed using polyamide in simple interrupted suture pattern (Fig. 5). Similar technique was performed to the right eye too. Antiseptic dressing and bandaging were performed as per standard protocol. Postoperatively, the dog was treated with topical moxifloxacin eye drops (2 drops instilled four times in a day for 7 days) and carboxymethylcellulose eye drops (2 drops instilled three times in a day for 3 days), fluid therapy (inj. DNS), antibiotic (inj. ceftriaxone @ 15 mg/kg, IM) for 5 days along with NSAIDs (inj. Meloxicam @ 0.2 mg/kg, IM) for 3 days and regular antiseptic dressing and bandaging. Elizabethan collar was applied to neck to prevent self-mutilation. Skin sutures were removed on 14th postoperative day. Dog recovered (Fig. 6, 7, 8) uneventfully without any further complications.

Fig 1: Right eye–Pre-operative

Fig 2: Left eye-preoperative

Fig 3: Maked area over forehead to be excised

Fig 4: Excised portion of marked area over forehead

Fig 5: Closure of rhytidectomy skin incision with horizontal interrupted suture pattern and modified hotz-celsus skin incision with simple interrupted suture pattern.

Fig 6: Skin healing after removal of skin sutures

Fig 7: Right eye – Postoperative (Recovery)

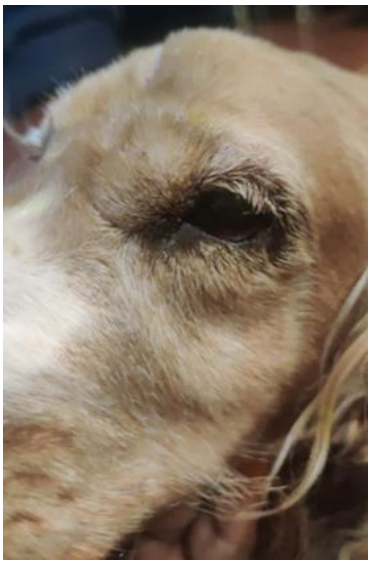

Fig 8: Left eye–Postoperative (Recovery)

Results and Discussion

By 3rd day of treatment, dog became active with better vision. By 7th day of treatment, Schirmer tear test value was found to be normal and there was no epiphora. Skin sutures were removed by 14th postoperative day. Dog recovered uneventfully without any further inversion of eyelids and other complications.

Eyelids plays an important role in protection of eye globe. They are essential in entrapping debris, distribution of tears to prevent dry eye [4]. Inversion of eyelids is termed as Entropion. Various factors like anatomy of the eye, age, heredity, trauma, physiological and pathological conditions, faulty surgical interventions predispose for the occurrence of entropion. Due to inversion of eyelids there will be deviation of eyelashes resulting in irritation to sclera, cornea and conjunctiva. Frequent irritation results in epiphora, hemorrhage, congestion and blepharospasm [5]. If entropion is not corrected early results in ulceration of ocular tissues. Assessment of tear production by Schirmer tear test and ulcers in eye by fluorescein dye test is essential before proceeding to entropion surgery. Modified hotz-celsus technique is the most popular and widely accepting method for correction of entropion [6]. CO_2 laser technique is an easy, less traumatic method for correction of entropion when compared to hotz-celsus technique [7]. In certain cases where entropion is due to excess facial skin folds over forehead region, combination of techniques is necessary for resection of excess facial folds called rhytidectomy [8, 9, 10]. In present case, prior to anesthesia, the region of forehead skin required for the general blinking of eyelids was measured and marked to be excised. Bilateral entropion was corrected by midline rhytidectomy and modified hotz-celsus techniques. Dog recovered uneventfully without any further complications.

Conclusion

In conclusion, midline rhytidectomy and modified hotz-celsus techniques are effective surgical procedures to restore normal eyelid function without any further complications.

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