

## SURGICAL REDUCTION OF A TOTAL ENTROPION IN A CHOW-CHOW USING RHYTIDECTOMY

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### **Abstract**

*Entropion is the inversion of all or part of the margin of the eyelid such that the outer lid skin contacts the conjunctival and/or corneal surfaces, causing damage. The degree of entropion is considered to be mild, moderate and severe. Could be lateral, medial, angular and total; may affect the lower lid, or the upper lid.*

*The total entropion is frequently seen in the Chow-Chow breed. This case reports 2 male Chow-Chow breeds, 3 and 4 years old, which were operated on twice for total entropion using classic techniques. This breed has prominent lateral and frontal folds, that cause the entropion. The classic techniques do not give the expected results and recurrences are common. These dogs can not see and the cornea is injured. The rhytidectomy is the only successful therapeutical option and it consists of the ablation of the prominent folds. The surgery was a success, both dogs can see and the corneal lesions healed.*

**Keywords:** *ablation folds, total entropion, rhytidectomy.*

### **INTRODUCTION**

Entropion is a rolling of the eyelid inward toward the eye. It is a very common condition in dogs and is less common in the cat, horse, and cow. It is considered familial in the dog, but the genetics are unknown. It is probably a combination of inherited conformation and exciting environmental influences, and thus does not behave as a simple autosomal trait. In large animals it is most common in neonates. In sheep it is reported to be inherited (Charles L. Martin, 2010). The degree of entropion is considered to be mild (margin tilted about 45°), moderate (tilted by about 90°), or severe (turned inward by about 180°), ( Kirk N. Gelat, 2008). In the entropion often appears conjunctivitis and epiphora, but we see the entropion in one eye and the conjunctivitis and epiphora in both eyes; the epiphora produces depigmentation of the inverted lid margin. Corneal ulcer, focal superficial keratitis with scarring, pigment, and neovascularization, blepharospasm are present in the moderate entropion, and also in the severe entropion

can occur, severe blepharospasm, keratitis, the cornea could be examined only under the anesthesia (Charles L. Martin, 2010). Entropion may result from a difference in tension between the orbicularis oculi muscle and the malaris muscle (lower lid entropion), and influenced by multiple conditions such as the length of the lid fissure, conformation of the skull, the orbital anatomy, gender, and the amount and folds of the facial skin around the eyes (Kirk N. Gelat 2008). The first point to remember in entropion is to serve the cornea. Entropion occurs when there is an in-turning of the eyelid resulting in corneal irritation and possible ulceration. Surgical correction is often less than satisfactory. In addition, many surgeons fail to perform a modified Hotz-Celsus procedure in the correct location, instead making their incisions too far from the eyelid margin. Finally, incorrect suture selection may be associated with irritation, blepharitis and self-trauma. Prior to entropion repair, the eyelid length should be measured using a Jamieson caliper and a lateral canthoplasty performed to shorten the eyelid to the correct length OU, a modified Hotz-

Celsus procedure is performed with the initial incision parallel to and 2mm from the eyelid margin. These techniques will address the majority of canine entropion. For more severe entropion, as seen in the Shar-Pei and Chow Chow it may be necessary to resort to more aggressive procedures such as a brow-sling or stellate rhytidectomy (David A. Wilkie, 2011).

The juvenile entropion can occur to Shar Pei breed, after the lids open, this often involves both upper and lower lids. Golden Retriever and Chow-Chow develop the entropion at a few months of age. Occasionally, the Chow-Chow male breed develops entropion in the middle aged. This appears because of the subcutaneous fat deposits. Entropion in the broad-headed breeds like Rottweilers and Mastiffs may extend around the lateral canthus and involve the lateral portion of the upper lid entropion associated with ectropion in dogs with a diamond eye conformation such as St Bernard and Clumber Spaniel; senile entropion, Elderly English Cocker Spaniels tend to lose elasticity in their facial skin, when this is coupled with excess facial skin (Simon Petersen- Jones and Sheila Crispin, 2002).

The management of entropion required depends on the type of entropion present.

Many methods and variations are available for the correction of entropion. There are a large number of surgical methods and variations to correct entropion, mostly based on Celsus-Hotz procedure. Each procedure has different indications, success rates, and possible complications.

Complicated entropion cases (combinations of upper and lower lid entropion, medial entropion, and lateral canthal entropion) may require more than one type of surgical procedure and even multiple surgeries ( Kirk N. Gelat, 2008).

Also, there are others surgical procedures for canine entropion: eyelid “tacking” ( puppy entropion; to hold the lids open and to avoid conjunctival and cornea), Celsus- Hotz ( most cases of entropion involving lower, upper, medial and lateral canthus; it is seen to Chow-chow and Shar Pei breed); Wyman pedicle is used to lower central entropion, Y to V,

plasty – Wharton Jones for mild central lower; Celsus-Hotz modified- medial entropion and secondary epiphora in toy and small breeds; Roberson’s; Wyman lateral canthoplasty for upper , lower and lateral canthal entropion in large and giant breeds ( Kirk N. Grlat, 2008).

Certain breeds of dog suffer by upper, lower and canthal entropion, because of the excess the face folds. The excess of the skin is twisted around the eyes and may cause a lot of ocular lesions.

When the classical techniques don’t work, because of the recurrences, or other factors like, breed with a lot of face skin, the rhytidectomy or the face lift is required. The Chow- chow and Shar-Pei spring to mind! This is a major surgery and large amounts of redundant skin are removed to lift and the upper lid back to normal position.

The position and the shape of the skin to be removed depends very much on the individual’s conformation. A horizontal band from behind the ears, a star-shape resection or an ellipse of tissue from between the ears might be removed. A steril marker pen is used to outline the area for resection. Meticulous suturing of both the subcutaneous tissue and skin is necessary. A surgical drain need to be placed for a couple of days, after the surgery, and the regular nursing attention. An Elizabethan collar is worn until the skin sutures are removed, usually 14 days postoperatively. Before any surgery, the owners need to be aware that the procedure will change the appearance of their pet( Sally M.Turner, 2005).

## **MATERIALS AND METHODS**

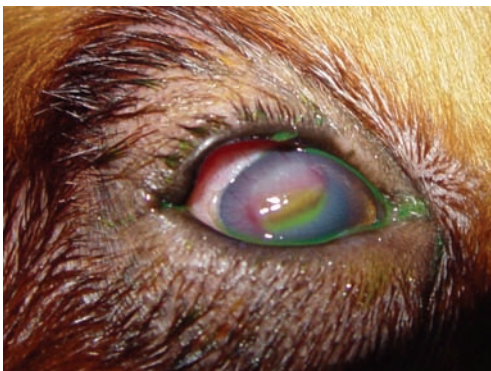
Two Chow-Chow male dogs, 3 and 4 years old; both had prominent lateral and frontal folds and this excess of the skin caused the total entropion in both eyes (Figure 1).



Figure 1. 4 years old, male Chow-Chow.  
Clinical presentation of total entropion

Both were operated using the classic techniques (Celsus-Hots), but after two surgeries, recurrences appeared. They returned to the clinic and the ophthalmic examination revealed corneal injury and total entropion secondary to prominent lateral and frontal folds.

The fluorescein test was negative and the schirmer tear test had normal values. These dogs had corneal lesions, blefarospasms, enophthalmos and one of them couldn't open his eyes and was bumping his head against objects (Figure 2). The other one could see, but his eyes could not open properly. Because the classic techniques didn't have the expected results, we decided to perform a rhytidectomy. The excess skin was removed, practically performing a lifting, so that the eyelids return to their normal position. The position and shape of the skin to be removed depends very much on the individual's conformation. For any complex eyelid surgery it is important that the patient is carefully prepared for surgery.



Figur 2.

3 year old, male, Chow-Chow. Total entropion with corneal lesion.

We clean and disinfect the area with povidone-iodine and a sterile field for surgery. Povidone-iodine diluted 1:50 in saline, is the preferred antiseptic. It is essential that iodine solution is used, since iodine scrub contains detergents, and is irritating when applied to the eye. Povidone-iodine has viricidal, bactericidal and fungicidal activity at this concentration, but is minimally toxic to corneal and conjunctival epithelium, and to inflammatory cells. The dogs were premedicated with medethomidine/butorfanol, induced with propofol and maintained with isoflurane. The first step was to examine the area, bilaterally, then delimitate the resection folds with a steril merker pen (Figure 3).



Figure 3. The delimitation of left lateral fold with a marker pen

We measured the folds with a needle holder and mark the suture guide, bilaterally examined the delimited areas, then we made the ablation; in this case we just cut and removed the lateral folds. The ablation areas were asymmetrical, the left one was 25x10 cm and the right one was 29x12 cm (Figure 4 and Figure 5).



Figure 4.  
The suture guide and needle holder to measure the skin

The laceration was closed with U- shaped, simple interrupted 1 nylon suture, on the right side we used 13 stitches and the left side 17 stitches, which are removed after 21 days (Figure 6). After ablation of the lateral facial folds the entropion of the upper eyelid was corrected, and for the entropion of the lower eyelid we perform the ablation of old scars using Celsus-Hotz procedure (we applied the rule of bisection). The wound is closed with simple interrupted 4/0 nylon sutures, which are removed after 14 days.



Figure 5.  
Needle hand to measure the ablation areas.  
The right and left ablation areas.



Figure 6. The aspect of the right lateral wound

In the other case we used the same techniques, but we removed the frontal fold (Figure 7).



Figure 7.  
Frontal fold ablation,  
3 year old, male Chow-Chow breed

The medical treatment includes preoperative systemic antibiotics for several days before and after surgery, as skin infections and wound breakdown should be avoided. The postoperative treatment is very important: cephalosporin 30 mg/kg, systemic, 10-14 days, NSAIDs (Onsior) 1mg/kg, 7 days, the wounds are clean with the saline solution and topical antibiotic ointment is applied twice until the sutures are removed and for the cornea we used 2-3 eye drops per day of HyCare. For the entire postoperative period and until all lid sutures are removed, a protective Elizabethan or E-collar is recommended to prevent self-trauma and wound dehiscence.

## RESULTS AND DISCUSSIONS

We have two cases with secondary total entropion which had been operated using classic techniques, and after having two surgeries, they returned to the clinic because of recurrences. Both dogs are Chow-Chow breeds with excess facial folds. They couldn't see because of the excess skin, which caused the secondary entropion and damaged the cornea. For more severe entropion, as seen in the Shar-Pei and Chow Chow it may be necessary to resort to more aggressive procedures such as a brow-sling or stellate rhytidectomy (David A. Wilkie, 2011).

The rhytidectomy is the best choice and is a facelifting technique. In the first case we

ablated the lateral folds, and the second one we ablated the frontal fold. For the entire postoperative period and until all lid sutures are removed, a protective Elizabethan or E-collar is recommended to prevent self-trauma and wound dehiscence ( Kirk N. Gelatt, 2008). There are some things to discuss when you decide to do the rhytidectomy. The success of the surgery depends very much on postoperative treatment, care, the kind of sutures and the removal time of the sutures. It is very important to give a systemic antibiotic like cephalosporine and topical antibiotics for the wounds, such as kanamycin/cortisone ointment to avoid wound dehiscence and eye drops to treat the damaged cornea. The lower eyelids' sutures are removed after 2 weeks and the lateral folds' suture are removed after 21 days.

After 24 hours of surgery both dogs opened the eyes and could see ( Figure 8). Sight isn't effected once the excess skin has been removed and the corneal lesions are healed.



Figure 8. After 24 hours of surgery it opens the eyes

## CONCLUSIONS

Ritidectomy is the only surgical option for recurrent entropion breeds with prominent lateral and frontal facial folds (in our case the Chow-Chow breed).

It is very important that before surgery, the owners need to be aware that the procedure will change the appearance of their pet; the dogs will have a different facial conformation, the skin will be stretched. But, also these dogs will see far better.

The sutures are very important; interrupted U-shaped sutures, nylon 1 suture, removal of sutures after 3 weeks for lateral and frontal wounds, but for inferior entropion, we used 4/0 nylon sutures, which are removed after 14 days.

Treatment is essential to avoid wounds facial dehiscence.

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