Surgical Correction of
Keratoconjunctivitis Sicca (Extreme Dry Eye) In Dogs

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What Is Keratoconjunctivitis Sicca?

Forty years ago veterinary surgeons began experimenting with surgical options to correct keratoconjunctivitis sicca (KCS), or severe dry eye in dogs. KCS is also a disorder in humans, most often in post-menopausal women (Sjogren’s syndrome). In humans, the loss of the hormone estrogen alters tear production, as well as lubrication of mouth, skin, and other mucus membranes of the body. Further research continues in humans and dogs because in all species, KCS is painful and blinding.

In dogs the disorder is believed to be caused by an autoimmune disease in which the dog’s own immune system attacks and destroys the tear producing glands around the eye. The dog’s body “reads” the production of tears from the tear ducts as invading enemy bacteria and attacks the area, as it would with any other infection. The immune system mobilizes to destroy the tear ducts and ultimately shuts down the production of tears. The dog’s eyes are no longer lubricated and therefore protected from the irritation of blinking eye lids. Untreated over time, the pain, itching, and irritation causes much suffering in any dog afflicted.

If the disorder continues, vision degrades because the dog’s corneas become opaque due to black pigment and blood vessels in a cloudy mass. Copious, tenacious discharge also seals the eyes closed. The discharge collects under the lids, as well as in outside areas of the eye structure and the dog’s face becomes soiled with the constant run of gunk. Left completely untreated, the eyes suffer from permanent corneal damage and eventually total blindness results.

Dog Behavioral Ramifications of Dry Eye

The physical discomfort and increasing difficulty in seeing creates a dog who may mentally withdraw from his world, become anxious due to the inability to feel safe in his environment, and succumb to depression and inactivity.
Owners may find their dog becomes less engaged, less reactive to affection, and considerably more fearful. The human/dog emotional bonding that occurs through play, walks, and other shared activities may erode as the dog becomes insecure and afraid of new stimuli he cannot see. Owners may feel guilty because they cannot help, are not aware of corrective medicines and surgery, or because they are unable to afford the costly care of medicines or surgery. These pets may end up abandoned, relinquished to shelters, or euthanized.

A homeless dog who undergoes the psychological degradation of peer (dog) social interaction, insecurity of aloneness with no special person’s emotional support, and physical pain will withdraw more quickly. An anxious, non-social dog will not be an easy adoption candidate, especially if he requires costly and time-consuming care. Many of these dogs are euthanized due to the extreme financial and emotional investments necessary for upfront remedial care and need for lengthy attempts to alter subsequent behavioral idocycracies that accompany the dry eye ailment.

The Miracle of Cyclosporine

In 1987 the development of cyclosporine revolutionized the treatment of dry eye in dogs. It was discovered that cyclosporine stimulated tear production. Restasis, a commonly used eye drop for people, hit the market around ten years after the dog equivalent. Ninety percent of dogs treated with cyclosporine for KCS experienced improved tear production and healthier eyes. Cyclosporine drops helped them live their lives as close to normal as dogs not affected.

Unfortunately, for some dogs—like NMDR rescue Nami—the tear drop regimen does not always work. For those animals, surgery continues to be the only possible remedy. As surgical techniques improved, most dogs benefited with minimal to no side effects or negative consequences—if their owners could afford it. For homeless dogs, the only hope became compassionate veterinarian specialists like Dr. Mathew Chavkin at Veterinary Referral Center of Colorado (VRCC), in Englewood, a suburb of Denver.

Parotid Duct Transposition Surgery
Dr. Chavkin and his staff routinely offer specialized ophthalmology care to area rescues, shelters and owners of dogs with financial restraints. He explains the surgery he performs on the rare dogs that cyclosporine does not help:

“Saliva is not a perfect tear, but in most cases, the improved lubrication makes dogs comfortable and preserves vision. Dogs have many salivary glands so what we do is select the parotid salivary gland located near the ear canal, dissect it and re-route it to the eye. It’s a long duct and rather large so it’s our first choice. Because of its location, we make two incisions—one in the mouth near its source or the papilla, and the second at the conjunctival sac under the eye.

“We separate the duct from the arteries, nerves, and vessels that enclose it, then tunnel it up along the dog’s cheek. We attach it to the conjunctival sac, which opens onto the eyeball. When the dog salivates naturally, as when food motivated, the normal flow of saliva that used to be delivered into the mouth is then re-routed to the eye.

“The dog has a lot of salivary flow when given treats or food, but it isn’t necessary for the dog to be eating to have a flow of saliva. Dogs have a constant flow of saliva, even when they are not thinking about food. It’s an automatic neurological event called basil salivary flow.

“The cheek incisions heal quickly and in twenty years of doing this surgery I’ve only had one dog develop an infection. The parotid salivary gland is ten times larger than the tear gland so the dog’s eye is well lubricated after surgery.

“The surgery isn’t one hundred percent successful though, because in rare instances, dogs may be unable to tolerate the pH of their own saliva in their eyes. In such cases, we do a revision surgery in which we reduce salivary flow by narrowing down the amount of fluid that enters the eye. We suture off part of the opening of the parotid gland so less fluid enters the conjunctival sac.”

**Vision Results**

Dr. Chavkin continues, “Following surgery our patients are restored to ‘functional vision.’ In Nami’s case, we were able to increase her vision about fifty percent. For dogs who are treated sooner into their cases, we can restore even better vision. Nami will still see through a cloud because her disease was untreated for so long, but we found she successfully tracked cotton balls
dropped on both sides of her face, which indicted her improvement in vision. Before her surgery she couldn’t see the cotton balls fall.

“The cotton ball test is our low-tech way of measuring vision in each eye—if she responds to a ball dropped on each side, as she did, we know she sees out of both eyes. We use cotton balls because there are no ‘giveaways’ for false readings such as sound or scent. If she responds to movement of the dropped cotton, we know she didn’t hear it fall, smell it pass, or respond to any other clue. We know her reaction was purely sight oriented. So we consider her surgery a success and the best we could do.

“Nami needed help to find a permanent home and our goal was to simplify her care regimen, provide her with more quality of life, and to make her an easier, more appealing adoption candidate.”

Dr. Chavkin has been doing parotid salivary gland surgeries since 1990 and as new techniques develop, he quickly seeks out the knowledge in order to continue to contribute in his passion for helping animals in need.

*Without veterinarian specialists like Dr. Chavkin, organizations such as National Mill Dog Rescue (NMDR) and generous donators, dogs like Nami would continue to suffer. Join us in the mission to save those who need assistance: dogs who are afflicted, owners who have financial restraints, and rescues who seek out the disadvantaged animals who deserve better lives. Contact National Mill Dog Rescue at [www.milldogrescue.org](http://www.milldogrescue.org) and give what you can.*