

## **Chronic Runny Eyes in Rabbits**

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We hear the complaint all the time. “My rabbit constantly has runny eyes. The vet gave us antibiotics, and it cleared up for a while. But once we stopped, it came right back.”

In a healthy eye, tears are constantly produced to bathe and protect the eye, and are drained away via the **nasolacrimal canal** (“tear duct”), a tiny, mucous-membrane-lined tube. The opening of the canal, known as the **punctum**, is located in the corner of the eye closest to the nose (the **medial canthus**). The duct travels through the skull and empties tears into the nasal cavity.

Abnormal overflow of tears is known as **epiphora**. While not life-threatening, it can be troublesome and frustrating: constantly wet fur and skin promotes bacterial growth, resulting in inflammation, fur loss, and discomfort. Causes of the problem are varied, and a correct diagnosis is essential for effective treatment.

### **I. Conditions that cause obstruction of normal tear drainage**

In rabbits, one of the most common reasons for epiphora is obstruction of one or both nasolacrimal canals. There are several ways this can occur.

#### **A. Congenital Problems**

Some rabbits, particularly those with short faces (think: lop and dwarf), are born with abnormally narrow or even kinked tear ducts. Such bunnies are particularly prone to chronic tearing. If their abnormal anatomy is subjected to additional challenges (see below), then chronic epiphora can result.

#### **B. Acquired Problems I: External Pressure on the Duct**

Many rabbits with no history of runny eyes in their youth can later exhibit this condition for a variety of reasons.

##### **1. The Dental Connection**

Rabbits have **open-rooted** molars and incisors that grow throughout the bunny’s life. The bases of some molars are located just under the eye and tear duct. Abnormalities around these molar roots can press on the tear duct and cause narrowing or complete obstruction, resulting in epiphora.

###### **a. Dental Infection**

Pressure from abscess/inflammation of the upper molar roots can cause partial or complete obstruction. While removal of a bad tooth may be important in treating infection, it may not resolve the associated runny eyes.

Scarring can block a tear duct just as effectively as the original abscess did. If this is the case, then the runny eye will likely be a lifelong affliction.

### **b. Maxillary Osteoporosis**

Age-related bone loss is as real a problem for rabbits as it is for many humans. The rabbit skeleton--and skull bones in particular--are light to begin with. As bone density decreases with age, dental problems affecting the tear duct can develop. The **mandible** (jaw) and **maxilla** (skull bone housing the upper dental arcade) both are susceptible to bone loss. In a thinning mandible or maxilla, normal chewing pressure can gradually drive the molar roots deeper into the delicate bone. If this happens in the maxilla, intruding roots can pinch off the tear ducts, causing epiphora.

## **2. Abnormal masses**

Neoplasias (cancers) or abscesses in the sinus, eye, or bone around the tear ducts can exert enough pressure to narrow the tear ducts. Scarring anywhere along the ducts or puncta do the same. Injuries to the face or eye, and even trauma from medical procedures, such as facial surgery or tear duct cannulation, can sometimes block the ducts, causing epiphora.

## **3. Inflammation from other conditions**

Swelling of mucous membranes in the sinuses can sometimes extend to the tear duct lining. Hence, conditions such as upper respiratory infection, conjunctivitis, or infection in the tear duct itself can trigger a case of weepy eyes.

## **C. Acquired Problems II: Internal Duct Disease**

Sometimes the problem is inside the canal itself.

### **1. Inflammation or Infection of the lacrimal sac**

Normal rabbit tears are translucent, and slightly milky in appearance. If discharge from the eye is purulent, opaque white, or has the texture of stringy mucus, then the source might be an infection in the upper end of the nasolacrimal canal, known as the **lacrimal sac**. The medical term for this infection is **dacryocystitis**. Swelling of the mucous membranes lining the ducts can be caused by bacterial or fungal infection, or by allergic reaction.

### **2. Cellular debris**

Like any epithelium, the cellular lining of the nasolacrimal ducts is constantly being sloughed and replaced. Cellular debris can sometimes build up and obstruct the canal, necessitating a flush by your veterinarian.

### **3. Neurological disorders**

Facial nerve paralysis resulting from surgery, trauma, or central nervous system event (e.g., stroke) can cause the eyelids to droop and allow tears to overflow. Nerve damage also can interfere with normal function of the lacrimal pump that forces tears through the nasolacrimal canal.

## **II. Conditions that cause overproduction of tears**

Injury or disease of the eye can result in tear production that exceeds the drainage capacity of the nasolacrimal canals. Treatment of the primary condition will usually resolve the excess tears. While many veterinarians are familiar with disorders of the eye, your vet may refer you to a veterinary ophthalmologist if the condition requires the expertise of an eye specialist.

### **A. Corneal injury/ulceration**

The cornea is the transparent “window” covering the eye’s pupil and iris. Exposed as it is to the environment, the cornea is easily injured. Even an injury invisible to your naked eye can cause copious tears. Squinting and unusual sensitivity to light in the affected eye mean it’s time for a trip to the vet.

A corneal injury may sometimes degenerate into a corneal ulcer, visible as a cloudy, whitish spot or larger area. This is not only painful, but can threaten vision in the affected eye.

Your veterinarian can prescribe appropriate medications and treatment to help the eye heal. The excess tears will then resolve. A combination of antibiotics, anti-fungal medication, and EDTA (ethylenediamine tetraacetic acid) may be prescribed to promote corneal healing. Atropine drops can reduce pain by paralyzing the intraocular muscles that spasm in response to the corneal injury. While many rabbits produce atropinase, an enzyme that breaks down atropine, many rabbit-savvy veterinary ophthalmologists will prescribe it anyway, since it will offer at least temporary pain relief.

In some extreme cases, the eyelid may need to be temporarily (or partially) sutured shut, to allow healing. But once the corneal problem is resolved, the excess tears that come with it will also stop.

### **B. Eyelid Abnormalities**

Even slight eyelid malformations, whether congenital or acquired, can interfere with normal, protective eyelid function. Eyelashes growing at an abnormal angle (**trichiasis**) can scratch and irritate. **Entropion** (eyelids rolled inwards) causes eyelashes and rough external skin to rub against the cornea. **Ectropion** (eyelids rolled outwards) not only irritates the cornea, but the sagging lower lids allow tears to flow out of the eye instead of into the punctum. These conditions may be congenital or acquired as a secondary condition in a bunny with an inflammatory process of the eyelids, such as infection or mange.

The **meibomian glands**, located inside the rim of the upper and lower eyelid, normally provide an oily lubricant that increases tear viscosity. Inflamed glands have impaired function, and epiphora can result.

Some of these conditions can be treated with appropriate medications, but congenital or unresponsive problems may need surgical repair.

### **C. Conjunctivitis**

Inflammation of the mucous membranes cupping the eyeball (the **conjunctiva**) and/or the **nictitating membrane** ("third eyelid") also can cause runny eyes. Conjunctivitis will often cause the eye to produce a thicker, stickier discharge than normal, watery tears. Pathogens or allergies are possible culprits.

### **D. Glaucoma**

In a healthy eye, a thick, watery fluid (the **aqueous humor**) is produced by the **ciliary body**, located behind the iris. The aqueous humor fills the space between the lens and cornea, providing the intraocular fluid pressure that gives the eye its normal shape. The aqueous also performs other important functions in the eye. It is constantly replenished, so excess fluid is drained from the eye via net-like channels--the **trabecular meshwork**--at the base of the cornea.

When fluid input exceeds fluid output over time, increased ocular pressure can result. This is known as **glaucoma**. It can result from either overproduction of aqueous by the ciliary body, or a failure of the trabecular meshwork to drain it sufficiently.

Glaucoma damages the retina and optic nerve, resulting in blindness. While not common in rabbits, it does occur. Unfortunately, glaucoma is usually asymptomatic in its earliest stages, and by the time signs of trouble appear, damage is already done. Advanced glaucoma can cause the eyeball itself to enlarge, stretching the connective tissue that provides its infrastructure, and causing inflammation of surrounding tissues. In some cases, the eye responds to this irritation with excess tears.

If your bunny's weepy eye has an unusual, glassy appearance and seems larger than normal, contact your vet immediately. Prompt treatment of glaucoma is critical to saving vision in the affected eye.

## **III. Diagnosis**

Your veterinarian will have many tools at his/her disposal to determine the nature of the problem causing your rabbit's epiphora. Simple procedures such as testing your bunny's sensitivity to light may give the vet a hint that a corneal injury is the problem. Staining the eye with a temporary dye and viewing with ultraviolet light can reveal corneal ulcers or fungal infection. Culture and sensitivity testing might be necessary if bacterial infection is suspected.

Various types of imaging (radiography, ultrasound, endoscopy) might be employed to determine whether abnormal masses are present, followed by biopsy to positively identify such lesions. Because of the wide variety of possible sources of epiphora, more than one technique might be necessary before the cause of your bunny's ailment is identified.

#### **IV. Treatment**

If your veterinarian suspects a simple case of cellular debris blockage, the treatment might be as mild as ophthalmic drops containing antibiotics to kill bacteria and corticosteroids to reduce inflammation of the mucous membranes. If drops alone don't solve the problem, your vet may suggest a tear duct flush (or a series of flushes). If the problem is a dental or sinus infection, your vet may prescribe topical and/or systemic medications. These may include anti-inflammatory medications, antibiotics, and/or antifungal medications, depending on the pathogen(s) or processes involved.

Unfortunately, in many cases the problem recurs, and a permanent solution just isn't possible. Lifelong palliative care may be necessary. Your vet might instruct you to use a moist, warm cloth with mild antiseptic to wipe tears and debris from the fur, so they will not accumulate and provide a bacteria-friendly environment. Severe epiphora may necessitate daily face washing with warm, running water (not something your bunny will necessarily enjoy, at least at first!).

Constant maintenance is necessary, provided either by the human caregiver or by a bonded bunny mate who is willing to groom and clean the affected areas. An especially attentive mate might groom to the point where there's a bit of bald skin around the eye(s), but at least the weepy bunny will be more comfortable. Who knows? This might be just the reason to finally make that big decision and let your runny-eyed bunny choose that kissy bunny mate he's been dreaming about for so long. Sometimes a good dose of love can make all the other medicines work that much better.