

*The Eyes Have It*  
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First let us start with a few definitions which we will use throughout this article.

**Entropion-** turning in of the eyelid so that the eyelashes touch the surface of the eyeball

**Cornea-** the clear part of the eyeball that covers the iris, pupil and the anterior chamber- dome shaped

**Trichiasis-** eyelashes placed in an abnormal fashion- a problem when they touch the cornea

**Distichiasis-** a double row of eyelashes- one or both rows may turn inward and touch the cornea

**Heterotopic bone formation-** new bone formation in the ciliary body of the eyeball

**Ciliary body-** lies just behind the iris, makes aqueous humor and controls the shape of the lens

**Conjunctiva-** thin transparent epithelium that starts at the edge of the cornea and extends to the eyelid margin

**Sclera-** white part of the eye

**Limbus-** where the sclera meets the cornea

Probably the most common condition that pet owners and breeders see in their cavies is “pea eye”. Pea eye is a term given to a fatty deposit underneath the conjunctiva of the lower lid and occasionally the upper lid. Pea eye is a disqualification on the show table but seems to cause the animal little distress. There are various explanations given for why it develops and whether or not there is a genetic component to its presence. Unfortunately, I think the jury is still out on these questions. Most breeders will say it primarily occurs in their fast growing, well conditioned animals. It will sometimes make its appearance very early on in the life of the animal and sometimes will not show up for a year or two. This makes it hard to plan a rationale for breeding these animals when it shows up late. You may have already bred many animals in your caviary to that animal with such terrific body condition and type. One thing that is commonly said is that it may be more prevalent in animals with shorter heads, but until some method of measurement is developed to properly look at this variable- again, in my opinion the jury is still out. Different fanciers will have varied opinions on what causes it and what the breeding future is of the animals that have it. There is no treatment that is ethically available to correct this condition nor is it necessary for the comfort of the animal.

Probably the second most common thing seen in caviaries of texels and teddies are those newborn eyes that turn cloudy shortly after birth. These breeds seemingly have more problems with the cornea being rubbed by eyelashes than other breeds, but you can see this condition in any breed of cavy. The eyelids may be rolling in and allowing the lashes to irritate the cornea of the eye in a condition called entropion or there may actually be aberrant eyelashes either positioned incorrectly or additional rows present. No matter what the cause, the cornea of the eye is irritated. In a normal, intact cornea, the tissue is in a state of dehydration which allows the corneal stroma to be clear. Once that very thin epithelial covering of the cornea is damaged, fluid is allowed into the cornea and you get corneal edema. The cornea is no

longer clear but instead appears grayish/whitish. This is a painful condition and one which needs remediation to prevent scarring of the cornea. First, identify what specifically is causing the problem. If it is entropion try to roll the eyelid out, everything it so that the lashes do not come in contact with the cornea. Most of these cases will resolve. Having lashes that are growing the wrong way or having an extra row of lashes presents more of a problem. Thankfully this is not as common. Sometimes surgery is necessary to correct this condition or long term problems may develop. Without correcting the underlying problem, the cornea may ulcerate and scar and will remain painful. How to treat this: In the absence of a corneal ulcer, correcting the inciting cause and using an ophthalmic moisturizing drop will sometimes be all that is needed. The cavy tear film has an abundance of lipid and mucin in it (hence the whitish color of the tears. I cannot find the reference for this but read it somewhere and it makes sense to me.)-this is why I would not recommend using simple saline to try to moisturize the eye. It may seem counterintuitive to moisturize an eye that has taken on water in the cornea, but you want to provide as much comfort as possible in the affected eye so that the lids are held open in a more normal position which will also lessen the lash contact with the eyeball. Some folks will use Vitamin A capsules or Vitamin E capsules and drop the liquid into the eye. My own opinion is that it is probably the oil- acting as a carrier for the vitamin- providing the lubrication that benefits the eye rather than the actual vitamin itself. Once an ulcer has developed it is time to bring in antibiotic ophthalmic preparations.

(Editorial- Firstly, let me say this: all ophthalmic preparations have gone through the roof and many are unavailable. There has been great gnashing of teeth because Terramycin® Ophthalmic is no longer available- and to that I say good riddance. I have listened to a veterinary ophthalmologist lecture as has a colleague in a different state and both of us were told that Terramycin® causes a great amount of irritation in the eye itself and have abandoned its use. The ophthalmologist whose lecture I attended uses Tobramycin as her first choice for uncomplicated ulcers- something I have been using for over 15 years when needed. One of the reasons folks are so enamored of Terramycin® is simply because it is something that they can buy without seeing their veterinarian- or at least were able to in the past when it was available. There are only a very few specific instances where this medication might be warranted, but there are also different choices that can be made in those instances. I am pretty strict about what I put in the eyes of my animals and it must be a product made for the eye. I know lots of you have a different opinion about what you will put in the eyes of your animals which is OK with me. I know it can be difficult to get drugs for your covies from veterinarians without an office call which makes getting a tube or bottle of an eye medication rather expensive.)

There are also developmental anomalies which can be bizarre and which need surgical treatment to effectively resolve the problem. You can have an island of ectopic lashes in the conjunctival sacs which can be easily snipped out under local anesthesia. I do not consider this to be altering the animal in any fashion but rather addressing a health care need. It does not seem to have a genetic component in covies. Your opinion may vary. The second thing that we can see- thankfully rarely- is an area of lashes directly growing out of the cornea. This is called a dermoid. The only way to definitively address this situation is with a keratectomy in which the outer layer of the cornea is removed along with the dermoid. This may be a surgical or a laser procedure. Since most folks will not be doing this for their animal, keep the eye lubricated to provide as much comfort as possible. (I have heard it proposed to enucleate the eye- cut it out- but that's not an option I would run towards.)

Conjunctivitis in caviary is a highly contagious infection of the eye. Inclusion body conjunctivitis is caused by *Chlamydophila psittaci* or *caviae*, while *Streptococcus equi zooepidemicus* and Salmonella have also been identified as causes of conjunctivitis. Quesenberry considers GPIC (guinea pig inclusion conjunctivitis) to pose a zoonotic potential (you might get it) and so hygiene must be at the fore when handling affected animals. She also feels that younger animals are more susceptible to GPIC with a wide range of symptoms ranging from asymptomatic to swollen painful teary eyes. Quesenberry recommends treating with tetracycline ophthalmic ointment while Jepson prefers enrofloxacin at 5 mg/kg sid and Ofloxacin ophthalmic drops.

Whatever the infectious cause of the conjunctivitis one thing has become clear to me in observing the animals in my own herd and in talking with a multitude of other fanciers who have faced this disease in their herds. It seems as though every animal in the caviary will get it and some will be mildly affected and some greatly affected with massive discharge from the eyes. The eyes on the same animal may be affected differently. When any animal in your herd is experiencing conjunctivitis of unknown origin, not only should that animal be kept at home but the remaining animals should not be shown nor any sales made out of your barn during that period. Obviously it is passed from one animal to another when it is asymptomatic, but I am no longer confident saying that animals not showing signs are fine to go to the show. I have no good answer on how long you should quarantine your animals after the last animal has cleared, but I would say in the neighborhood of at least one month. Again, this is for the sake of your fellow fanciers. I have used Ofloxacin drops in my herd but I cannot say that I believe it had much difference on the course of the disease. Again, cleanliness is paramount. The organism which causes GPIC has been cultured from the eyes of cats, rabbits and humans where it was present in the guinea pigs of a household. There is no shame in letting your fellow exhibitors know that their animals may have been exposed to this- or any other problem you discover when you get home (lice, URTI, etc).

An additional little factoid is that hypovitaminosis C (scurvy) will also cause conjunctivitis so judicious supplementation with Vitamin C may be a useful adjunct in therapy or be the single therapy that is required.

Another problem seen in our herds and especially in our red/pink eyed animals is heterotopic bone formation. These look like white flecks in the eye and are always peripherally located at the limbus. They may occur singularly or many may be present in the same eye. They may occur in one eye only, or be present in both eyes concurrently. In this condition the ciliary body ossifies as (presumably) a result of Vitamin C secretion into the aqueous humor. Williams remains unconvinced that it is the result of over-supplementation while Jepson feels it *is* the result of over- supplementation. Why is it seen more frequently in pink eyed animals? Perhaps simply the amount of pigment in dark eyed animals may mask its presence. In any event, this condition is a disqualification from competition and may or may not be associated with glaucoma. Conclusive matched studies have not been done.

The last thing to discuss here is a consideration of what is going on when you see an enlarged eyeball or an eyeball that seems to be pushed out of its socket. If the eyeball itself is truly enlarged, glaucoma is the probable culprit. Animals may acquire this through heterotopic bone formation of the ciliary body (although again, jury still probably out on this) and also luxated lenses- a lens that is no longer in its correct position. The more likely scenario for what appears to be an abnormally protuberant eye is a mass behind the eye. This may be a retrobulbar (behind the eye) abscess but is probably more likely

lymphadenopathy which may be associated with strep but probably more likely part of lymphoma. (I just had a case where one of my pigs very quickly developed exophthalmia and all his lymph nodes were externally and internally were enlarged.)

Fooled you! One more thing to mention sort of tangentially: In roan x roan matings one of the more common findings we see are very small eyes: microphthalmia.

In conclusion, this just briefly touches the surface of some of the conditions you may see in the eyes of your cavies. Each author is not in perfect agreement with each other, so I have tried to synthesize all points of view including conversations and lectures with other veterinarians. I am just going to list the references I used, in no particular order, but I would encourage you to download and copy Williams' article and the other thing to do would be to look at the anatomy of the eye online. William's experience in looking at the cavies in the population he studied does not match my own observations in my own herd, but is nevertheless an excellent article.

## References

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