

## Written in laymans terms by Belinda Goyarts - Raevon Pugs

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Having run a nationwide pug rescue for many years, I have become rather more acquainted with eye ulcers than I ever wanted to. Pugs are filled with boundless energy and a high level of curiosity, resulting in an extremely active and energetic breed of dog that just has to investigate every single thing in life.

This is great – however with a standard that calls for eyes to be ‘dark, very large and globular in shape’ I sometimes wish that my beloved breed had more of a couch potato disposition. I also find that Australian conditions (hot, dry and dusty) are not conducive to owning pugs – I’m quite sure UK Pug owners do not have as many day to day challenges with dust, prickly Yucca plants and dry air from constant airconditioning.

Pugs, boxers (and other dogs prone to eye problems) are prone to getting ulcers from scratches (plants/sticks/playing with another dog), or a bit of soap in the eye from bathing, from lying beside a fan heater, a hot dusty day can result in the cornea (eye surface) drying out, dust, eye lashes rubbing on the surface, or in the case of my guys at times, it seems just breathing.

General practitioner veterinary clinics do a good job with eyes in many cases, however I have learned enormous amounts from the actual eye care specialists – Melbourne Eye Vets – and their treatments are far more proactive and as a result, eyes are healed in a far shorter time frame, resulting in less pain and more eyes saved.

This article is written so that pug owners can have a better understanding of eye ulcers and how to diagnose quickly and treat them immediately, thereby in a high percentage of cases fixing the problem in a couple of days, rather than weeks, or worse, losing an eye altogether.

### **Danger signs to watch for**

The very first sign of an ulcer is generally excessive 'blinking' of the eye with some excess tears. If slightly worse, the eye can be squinting, and the lids look a little swollen. A trip to the vet and staining of the eye with a green dye will reveal the ulcer in its various stages of development.

The cornea (eye surface) is 0.7mm thick and has several layers – the epithelium (surface) (7 cell layers thick), the stroma = collagen in about 100 layers (like an onion), the endothelium and Descemet’s membrane.

A very shallow ulcer (often just epithelial depth) can be barely visible, but may develop a bluish clouding over a portion of the eye from fluid retention (oedema) due to inflammation. Sometimes ulcers can look like a white pinprick, a white scratch, or even a larger white area as big as a flattened cotton tip bud. Deeper ulcers can look like a hole or a divet (these involve the stroma). Very deep ulcers look like a deep hole, and the inner membrane can bulge = Descemetocoele. These can perforate, resulting in a collapse of the eye.

### **You've ascertained that there is an ulcer – now what?**

The major, very serious problem with ulcers is that quite apart from being painful, **they can get infected very very quickly, which is where the BIG problems start.**

Treated superficial ulcers can sit on the eye surface and heal at a normal rate, the big issue is to clear them up quickly as the longer they sit there, the more chance they have of becoming infected – and it is the infection that will rapidly eat through the surface layers of the cornea and result in perforation, quickly reaching the gelatinous filling of the eye - which can then leak out of the ulcerated hole. You have then progressed from a fairly easy-to-fix problem to a major issue involving surgery, grafts and/or possible loss of the eye.

### **Initial treatment**

- 1 Confirmation of the ulcer through staining with a Fluorescein strip. It is a good idea to have a look yourself once the ulcer is outlined clearly through the staining by the veterinarian, so that you can note if it is getting smaller/bigger after a day or two when you are at home.
- 2 Immediate prescription of antibiotics and anti-inflammatory drugs
- 3 Place an Elizabethan collar so they are not able to rub the eye

### **It is imperative that antibiotics be given in two forms:**

- **Chlorsig antibiotic drops:** These are antibiotic drops that are administered 3-6 x daily to the eye. These drops are excellent as they are broad spectrum – however they only stay in the eye for a short period of time before being washed away by tears. For this reason, it is essential that another form of antibiotic be administered that will have a longer and more lasting effect against possible infection:

- **Doxycycline tablets (oral antibiotics) :** Doxycycline is the best form of antibiotics to use in eye injuries as they concentrate in the dogs' tears, and flush over the cornea through the tear ducts 24 hours a day. Just as importantly, it has recently been found that Doxycycline, apart from fighting infection, promotes the healing of the cornea AND is anti inflammatory. Worth it's weight in gold!

## Anti-inflammatory drugs

- **Carprieve or Prolet** (or similar) tablets should be prescribed - they are an anti-inflammatory and also offer effective pain relief
- **Optimmune ointment** 3 x daily – this ointment acts like false tears and lubricates and protects the eye, has anti-inflammatory properties, and promotes normal tear production/healthy tear film.

If corneal ulcers become infected, or resist healing, more potent antibiotics should be used. e.g. **fortified gentamicin drops** (gentamicin ointment and drops not strengthened by adding extra gentamicin drug are of little use). These drops need to be used 10+ times daily initially until the infection has resolved (may take 7 days +).

- An alternative is **Ocuflox (ofloxacin)** that is even more potent.

## On arriving home

DO NOT LEAVE THE CLINIC WITHOUT AN ELIZABETHAN COLLAR; this will prevent your pug from rubbing the very delicate cornea. Be sure to keep him inside out of the wind and dust, until blinking and inflammation has disappeared.

Gently wipe any mucous away from the eye with sterile (or boiled) water before applying drops and ointments. **DO NOT RUB CREAMS INTO THE EYE** as you risk causing further trauma to the site. Apply the cream from approximately 1 cm away, and it will dissolve over the corneal surface. With smaller ulcers that have not become infected, you should notice a change within 24 hours, and an almost clear corneal surface within 3 days.

## The ulcer is not healing

Sometimes the position of the ulcer is so central, or so minimal in size, that blood vessels are not reaching out far enough to heal it. This is what you would then call an 'indolent' ulcer - meaning that although it is not necessarily getting bigger - it is not healing either. The danger lies in that the longer the ulcer is present, the greater the chance of infection occurring - so it needs to be dealt with quickly and effectively.

To encourage healing - vets can put anaesthetic drops on the cornea and then lightly debride (rub) the surface of the ulcer with a cotton tip bud to remove any unhealthy tissue that was not properly attached to the cornea (due to the presence of the ulcer). This loose tissue can have a delaying or negative affect in healing.

However, if the vet debrides the ulcer and its edges peel back - surgery is generally needed in the form of a **grid keratotomy**.

## Grid Keratotomy

This is only done to VERY SUPERFICIAL ulcers, and needs to be performed under a

general anaesthetic. Eye specialists may be able to perform this with the patient awake under a topical anaesthetic in the consult room depending on how large the ulcer becomes when the edges are peeled off and the unhealthy epithelium (skin layer) is removed.

A grid keratotomy involves taking a fine hypodermic needle and etching grid lines on the surface of the cornea over and around the ulcer. The grid lines allow healthy cells surrounding the ulcer to move along the channels into the unhealthy section of the cornea, thereby promoting healing.

To protect the site, the third eyelid can then be raised and attached to the upper eyelid with stitches. In some cases, the inside of the third eyelid can be scarified (shallow cuts/scraping performed) to allow the resulting blood flow directly on to the cornea to stimulate healing. The raising of the third eyelid will promote healing, and protect the eye from further trauma.

### **In the case of a deep hole/ulcer**

Deep holes/ulcers require a **conjunctival pedicle graft** – surgery will lift up an area of healthy conjunctiva (eye surface) and graft it over the unhealthy area. This is sewn into the ulcer bed. To protect the eye, a **temporary tarsorrhaphy** is done (a couple of stitches closing the upper and lower eyelid at the outer/inner corner closest to the graft site). These stitches are removed once the graft has reduced in size and the eye is returning to its more normal state.

### **Greater eye traumas – signs to watch for**

Initial symptoms of an ulcer can be blinking and excess tears. It is easy to keep an eye on this on a daily basis. After surgery has been done however, and the eye itself is covered by the third eyelid flap, it is not as easy to keep an eye on progress.

Initial symptoms of problems/greater eye injuries: inflamed eye area, redness, swelling, the dog averting its head from light, pulling its head away from the eye area as if trying to escape pain, sleeping a lot (an excellent sign to watch for when the third eye lid is sewn up - the dog gets so tired from the pain that it actually sleeps far more than normal).

Another excellent pain indicator is to compare pupils (if you do not have a third eyelid flap raised). The normal healthy eye will have a pupil that contracts with light, and dilates back again when you remove the direct light. An eye in distress will generally have a pin prick pupil - as the eye spasms in pain and prevents the pupil from dilating.

In spasming pinprick cases, vets will administer Atropine hourly for a few hours to relieve the spasms (on top of all the other treatments). Atropine causes the pupil to dilate to its fullest for 24 hours or more, making the eye extremely sensitive to light (as it cannot contract) so it is most important that when Atropine is being

administered, you **keep you dog in the darkened room.**

### **Theories/alternative remedies**

I have discussed at length with the specialists the alternative remedies used by owners - several that come to mind immediately:

Breeders have at times praised the use of milk, cod liver oil and/or serum taken from the affected dog as a treatment for ulcers. Whilst specialists did not discount these remedies - they did make a good point - which is that ulcers easily and rapidly become infected - which means they **MUST** be treated with antibiotics. Cod liver oil and serum may help with healing - but only after the danger of infection has been removed.

### **Emergency Eye Kit**

Living and travelling with Pugs means having emergency eye kits situated in various places. I always have one in the car, the show trailer, the caravan and in the house. I am not in any way advising readers not to seek veterinary advice, however I have found that if I am at a dog show, and miles away from my vet on a public holiday – I can at least commence treatment, which has no adverse affect on my dogs and will provide pain relief and possible prevention of infection. My emergency kits are made up of:

- Fluorescein staining strips
- Carprive or Prolet tablets (pain relief and anti-inflammatory)
- Doxycycline (antibiotics)
- Chlorsig (antibiotic drops)
- Optimumme (lubrication and anti-inflammatory)
- Sterile water sachets (x 2) for debris removal
- Cotton pads (non fibrous)
- Atropine drops – these drops are an extremely important part of your

eye kit. They dilate the pupil – and have two functions:

- 1) They stop the eye spasming in pain and
- 2) in the cases of a deep ulcer which is looking like it is on its way to perforating during your drive to the vet – the atropine drops have caused the pupil to dilate – which in turn can potentially plug the hole caused by perforation, and prevent too much loss of pressure before you get to the veterinarian

I keep all these items in each kit, and have found the small flatish Tupperware containers to be excellent as they store in small places easily, such as the car console.

This article only covers some of the more common occurrences that can crop up on a daily basis – and is just information that I have accumulated over the years and hopefully can be of some use.

**Belinda Goyarts**

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