

Canine Indolent Corneal Ulcers

UTCVM OPHTHALMOLOGY

Indolent corneal ulcers, also known as spontaneous chronic corneal epithelial defects, are superficial noninfected chronic corneal ulcers with loose epithelial borders that fail to heal within 1 week. They are a common diagnosis in small animal practice. While they rarely cause blindness or loss of the eye, they can still be a big frustration for the patient and owner. Below we will discuss the most common misconceptions and mistakes seen when diagnosing and treating indolent ulcers.

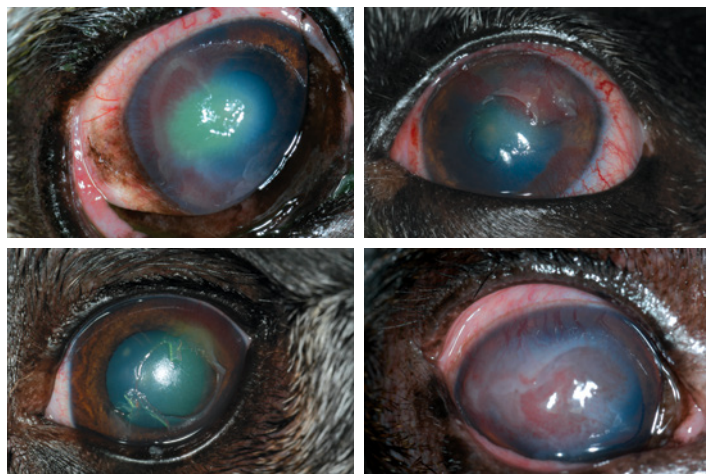
Clinical signs can be varying degrees of blepharospasm, epiphora, corneal edema, and vascularization. Boxers are predisposed, but indolent ulcers can occur in any breed. They are more likely to occur in middle to older aged (≥ 8 years) patients.

Diagnosis of an indolent ulcer is made through 1) recognition of a superficial nonhealing corneal ulcer, 2) exclusion of other reasons hindering healing, and 3) obvious loose epithelium or use of a cotton tipped applicator (CTA) debridement to prove that the surrounding epithelium is loose. Practitioners should be aware that fluorescein stain uptake can sometimes be faint due to corneal edema. Practitioners should also be aware that excessive vascularization and even granulation tissue is not uncommon (up to 50% of cases) when the ulcers become very chronic. Consequently, sometimes the heavily vascularized ulcers can look confusing as vessels can also be seen with corneal infections. However, indolent ulcers will NOT have signs of infection (yellow creamy color to the cornea, flare, fibrin, or any depth to the ulcer).

The cornerstone primary treatment of an indolent ulcer is removal of the loose, abnormal epithelium with a CTA debridement. This is a great first step as it is the least invasive and approximately 50% of indolent ulcers will heal within 2 weeks with this management alone. Other necessities include use of an E collar to allow the fragile epithelium a chance to adhere properly and use of a prophylactic, broad-spectrum topical antibiotic 3-4 times per day. Other medications can include topical or oral pain medications (e.g. atropine and gabapentin).

The next step if the CTA debridement is not successful is use of a corneal procedure to breach (or "roughen up") the superficial stroma. Most of these procedures have similar reported success rates with the grid keratotomy (GK) and diamond burr debridement (DBD) in the window of 75-90% healed in 2-3 weeks.

Whether performing a CTA debridement, GK, or a DBD, a few common steps should be followed. 1) The patient should be restrained properly by a knowledgeable handler with or without chemical restraint depending on the patient's tolerance and the surgeon's comfort and experience. 2) Proparacaine should be applied to the affected eye to properly numb the corneal surface. 3) The patient's eyelids and cornea should be prepped with dilute 0.2% betadine solution then rinsed with sterile eyewash or saline. 4) The eyelids should



Four examples of indolent ulcers with varying degrees of corneal edema and vascularization.

be retracted manually or via an eyelid speculum. 4) Sterile, dry cotton tipped applicators should be rubbed against the edges of the corneal ulcer centripetally to tease the unhealthy epithelium off the cornea switching to a new applicator frequently, as they are only effective when they are dry. 5) The CTA debridement is continued with enough pressure to slightly indent the cornea until there is no further epithelium that can be removed. A common pitfall is not being assertive enough to remove all unhealthy epithelium. 7) The GK or DBD can now be performed over the ulcerated cornea.

A GK has the advantage of no need for additional equipment aside from a 25 gauge needle but the disadvantage of more corneal scarring and a small inherent risk of corneal perforation. A DBD has the advantage of inexpensive equipment, less corneal scarring, and less inherent risk overall. However, diamond burr tips do need to be properly cleaned and sterilized between patients. Post-procedure infection rates are around 3-5% with small brachycephalic breeds (such as Boston Terriers) at higher risk - keep a closer eye on these patients!

Two adjunctive therapies that continue to carry popularity throughout the years include 1) topical use of a tetracycline (such as Terramycin) as a prophylactic antibiotic and 2) use of a bandage contact lens. Both have shown to shorten healing time of these ulcers. If patients are still painful (squinting) at recheck in 2 weeks then they are not healed, even if they are fluorescein stain negative. Epithelium can heal over the ulcer but remain unattached to the underlying stroma. A CTA can be used to gently touch the epithelium and see if it ulcerates again. If this occurs, a repeat procedure is recommended.

For any questions on how to better improve your success rates with treatment of indolent corneal ulcers contact the UTCVM Ophthalmology service.