



VISION VET

# Spontaneous chronic corneal epithelial defects

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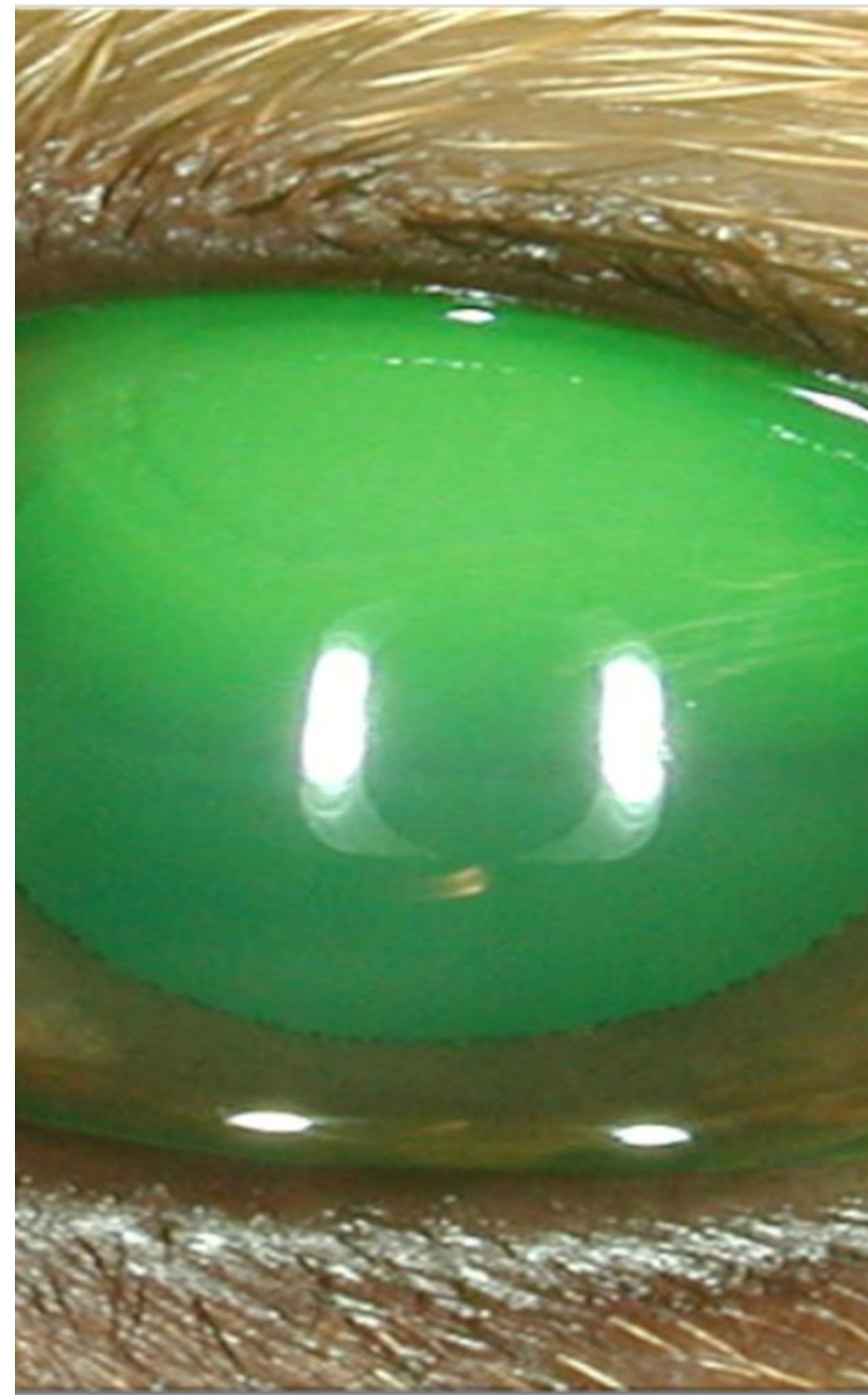
Veterinary ophthalmologist

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# Definition

Chronic epithelial erosions that fail to resolve through normal wound healing process, up to 1-2 weeks





# Breeds

- Boxers
- Corgi
- Crossbreeds
- Middle-aged dogs

# Clinical History



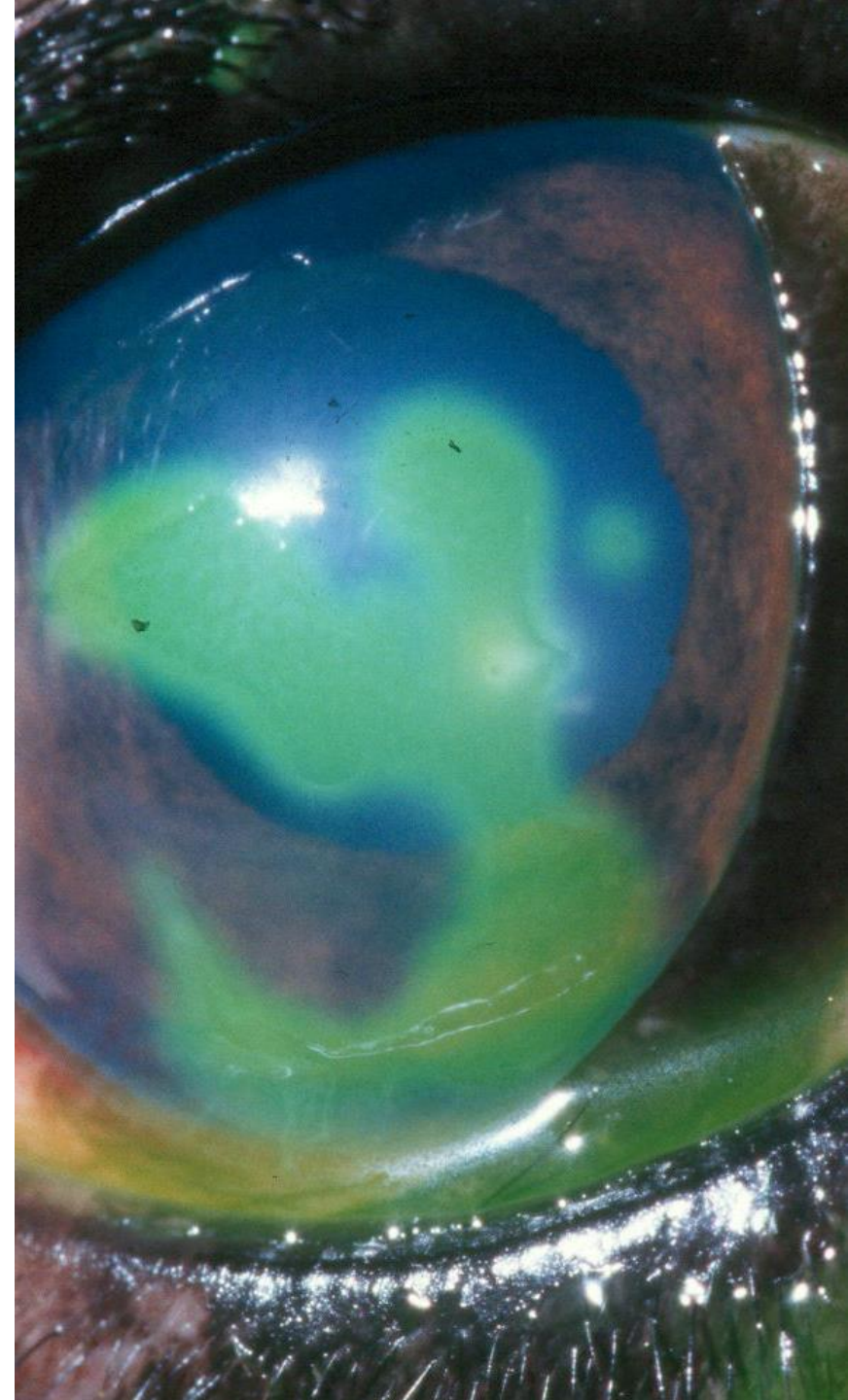
Slight redness and watering  
eyes for several days



Sometimes history of trauma  
to the eye

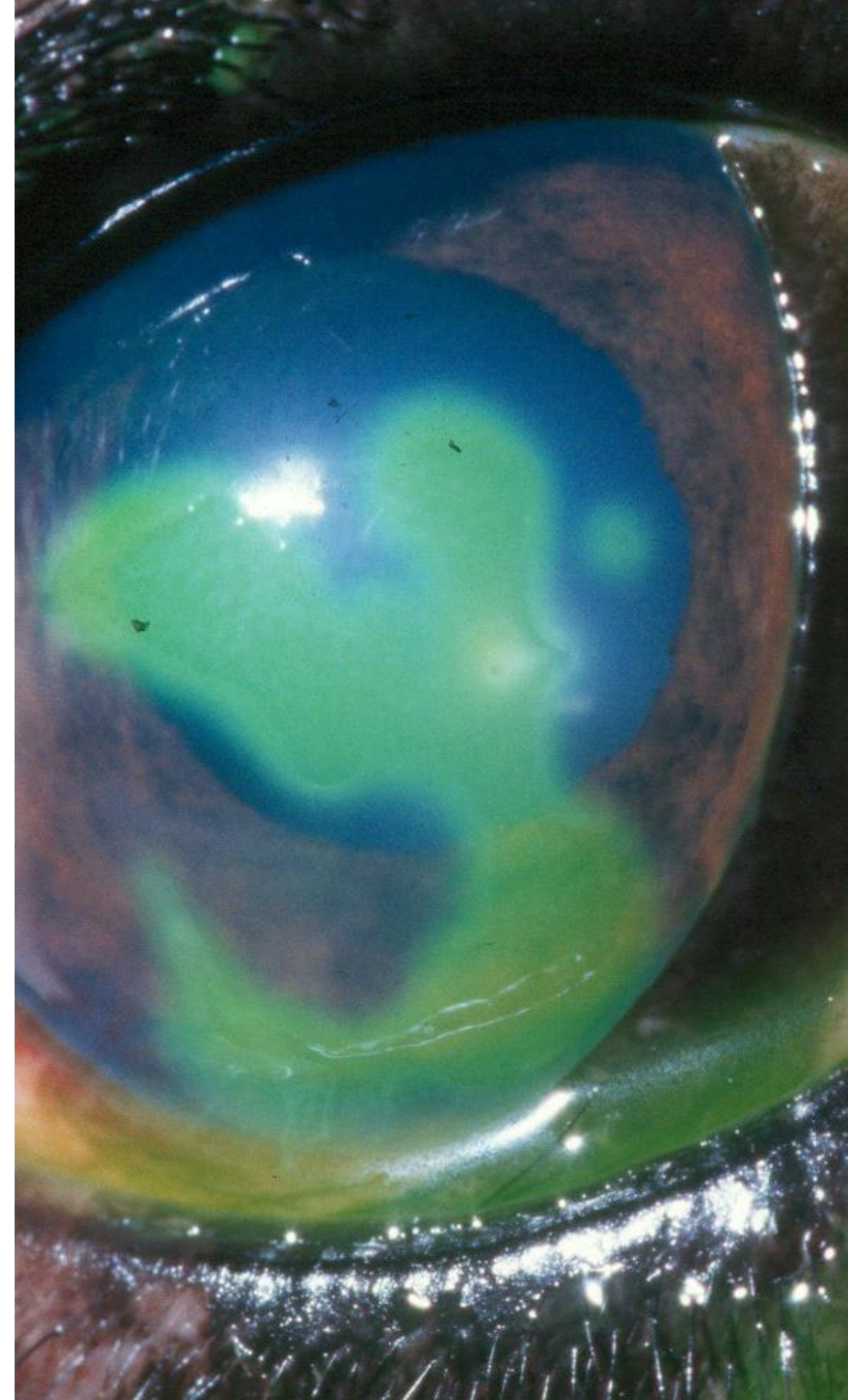
# Presenting Signs

- Mainly one eye affected but occasionally both eyes are involved at the same time
- Degree of discomfort is variable
- Mild conjunctival hyperaemia



# Presenting Signs

- Increased lacrimation
- The cornea sometimes slightly oedematous
- Sometimes a secondary bacterial infection can develop, ocular discharge will change from serous to mucopurulent





# Clinical Examination

- Full ophthalmic examination should be performed on both eyes
- Schirmer tear test in both eyes
- Fluorescein test in both eyes
- Ulcer has **an irregular outline** with **underrun edges** - the fluorescein leaches under the **loose epithelium**



# Clinical Examination

- Lip of a non-adherent epithelium is diagnostic for a non-healing ulcer
- There may be evidence of corneal vascularization with a granulation reaction.
- Mild miosis due to a reflex uveitis.



# Differential Diagnosis

Trauma i.e. cat scratch, foreign body

Entropion

Ectopic cilia

Trichiasis

Distichiasis

KCS

# Differential Diagnosis

Bullous keratopathy (secondary to corneal endothelial degeneration)

Glaucoma

Exophthalmia

Diabetes mellitus

Hyperadrenocorticism

Topical irritant

# Case Work Out



Good Clinical history



Minimal since diagnosis should be obvious from the presenting signs and the findings of the ophthalmic examination



Check for foreign bodies



If mucopurulent or purulent discharge, then perform a culture and sensitivity swab



I would recommend a blood test if there are any signs of systemic abnormalities

# Epidemiology

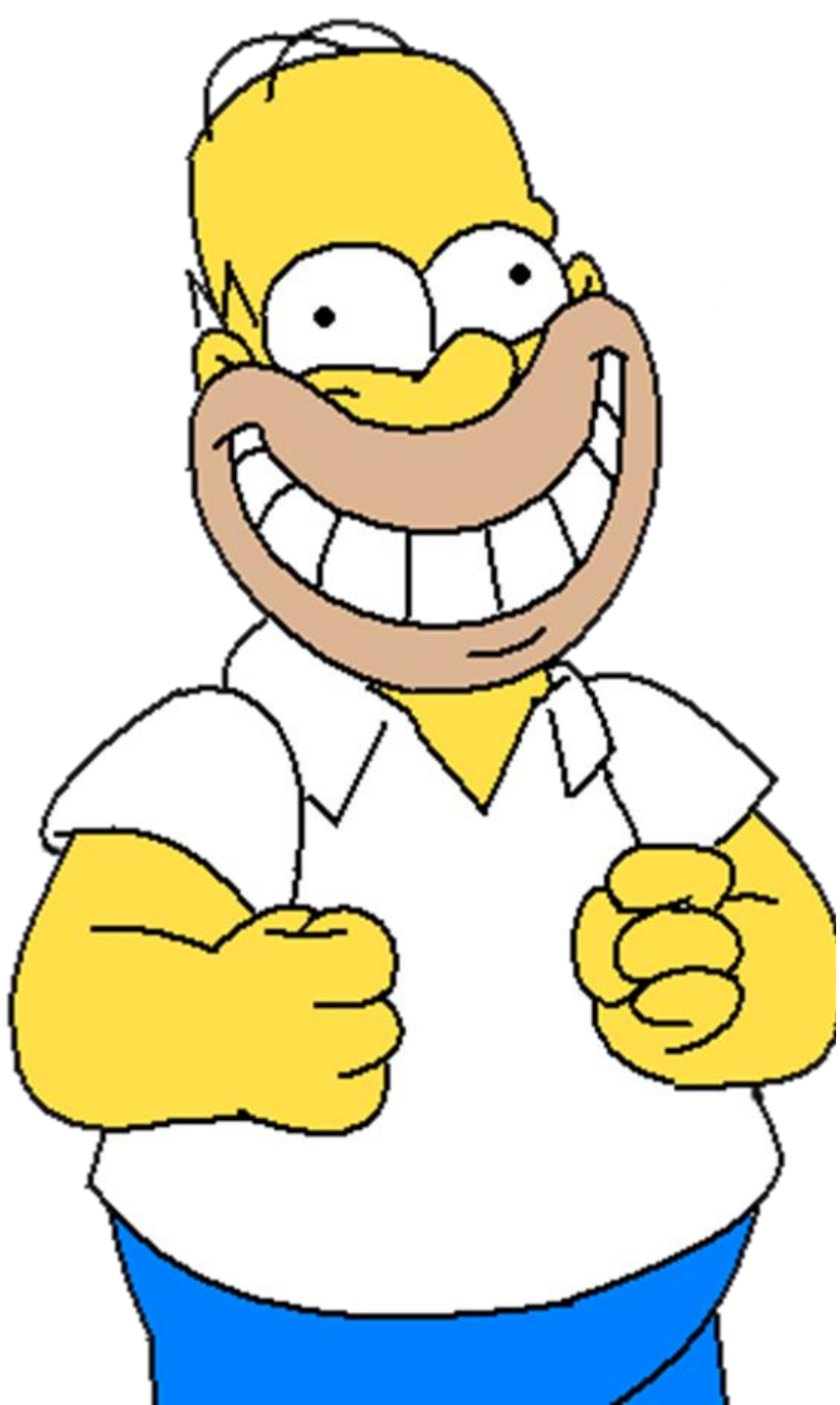
- Shallow, slow to heal and **have a tendency to** recur
- Due to **corneal epithelial dystrophy**
- Epithelial basal cells which produce **abnormal basement membrane** and reduce the number of **hemidesmosomes**



# Clinical Tips

- Explain the condition fully to the owner
- Expected healing time
- Potential complications
- Various treatment options





# Clinical Tips

- More likely to cooperate with **treatment plan** and improved result can be expected
- Draw up a **treatment plan**, with a **cut-off point** for referral if the condition has not resolved after a certain period i.e. a month

# Treatment

## Debridement:

- Fundamental to achieve healing
- Sedation may be required however, this is rarely necessary
- One drop of topical anaesthetic is applied, repeated 5 minutes later



# Treatment

## Debridement:

- Sterile cotton bud is used to remove all loose epithelium
- Gently rubbed over the ulcer and rolled at the edges to pull off the thin, loose tissue
- It will enlarge the ulcer significantly - important to explain that to the owner!



# Debridement



Patient should be checked a **week later**



If there is a **significant improvement by 50%** reduction in ulcer size plus no return of the lips of non-adherent epithelium then **continue** the treatment, the ulcer should heal in another week.



If the **ulcer is not much smaller or some non-adherent epithelium returns**, then the next stage includes debridement, grid keratotomy (GK) or Corneal Diamond Burr Debridement (DBD)



Under sedation or general anaesthesia



Debride cornea

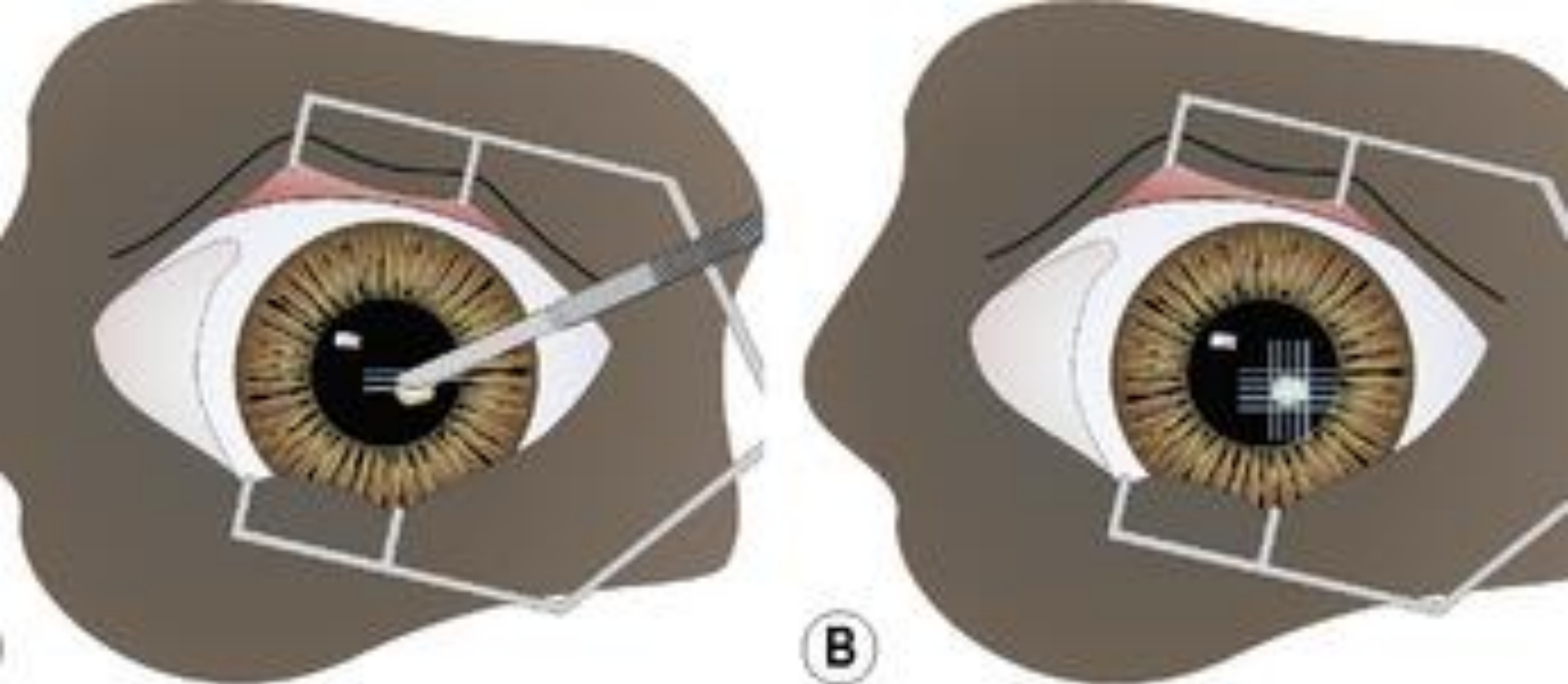


A 23-gauge needle is used



**1-2 mm on** either side of the ulcer, i.e. from the normal cornea, through the ulcer and to the normal cornea on the other side, in a grid pattern with **lines 1-1.5 mm** apart, about **0.1-0.25 mm deep**

# Grid Keratotomy



In the superficial grid keratotomy procedure, the corneal epithelia and anterior stroma are incised in a grid or cross-hatching manner within the corneal erosion and adjacent area. (a) The initial corneal incisions, about 0.1–0.25 mm deep, may be performed with the Beaver No. 6400 microsurgical blade, diamond knife or a disposable 23 g hypodermic needle. (b) A second set of crosshatching incisions are placed at 90° to the initial incisions. The grids should be 1.0–1.5 mm apart.

Small animal ophthalmic surgery, Practical techniques for the veterinarian, Kirk N Gelatt & Janice P. Gelatt, 2011 Elsevier, Page 200.

# Grid Keratotomy

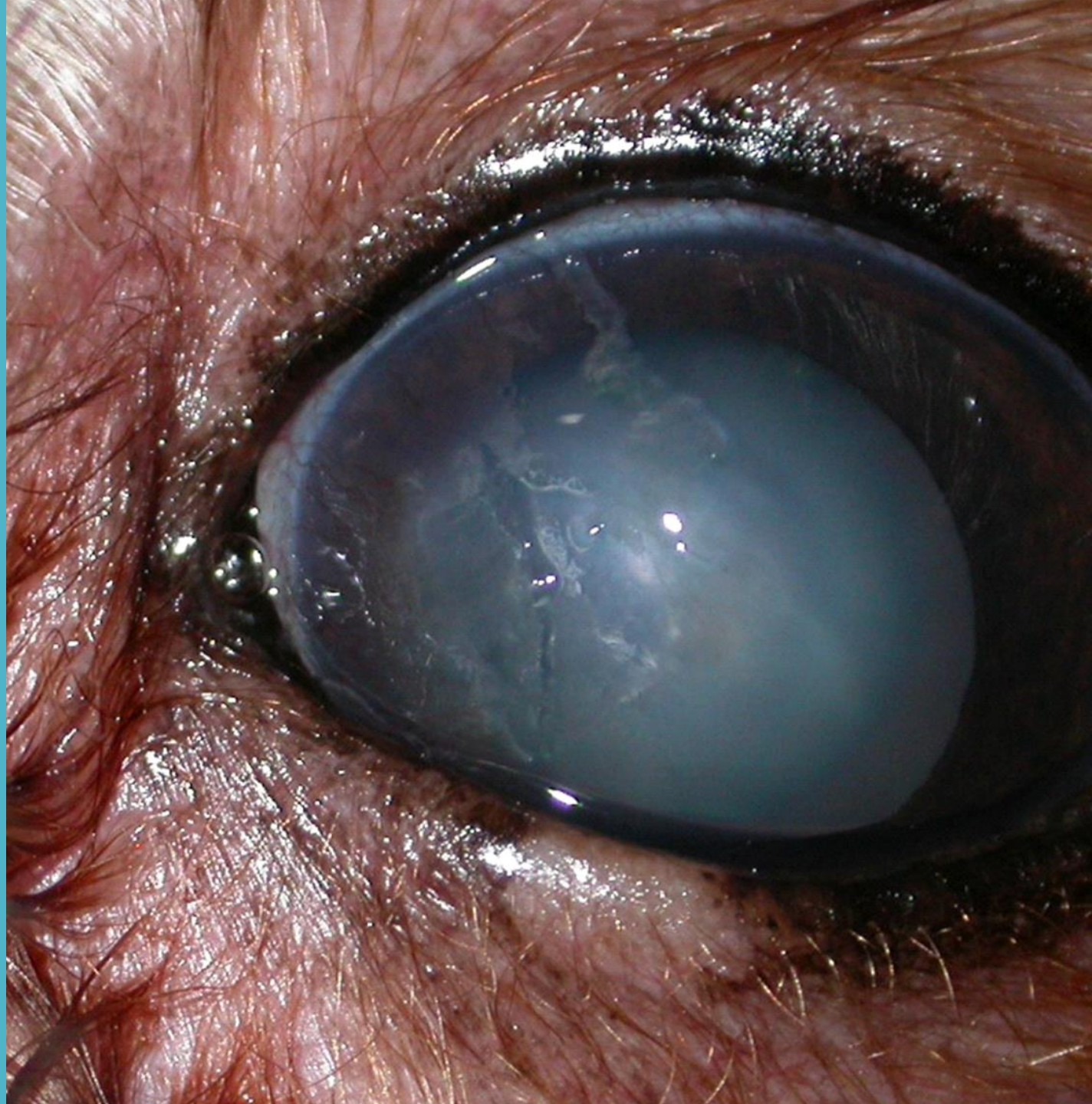
The aim is to **expose normal corneal stroma** for the new epithelium to adhere to and for normal hemidesmosomes to form.

Re-examine in 7 days. If ulcer didn't heal in 2 weeks then perform a **corneal DBD** , +/- contact lens (+/-temporary tarsorrhaphy), +/- 3rd eyelid flap suture to the bulbar conjunctiva.

# Grid Keratotomy

If the GK has **not** resulted in full healing, I would suggest referral for a full ophthalmic investigation and a **Corneal Diamond Burr Debridement** or **superficial keratectomy**.

Corneal  
Diamond  
Burr  
Debridement







Can be performed under topical anaesthetic, deep sedation or general anaesthetic



The burr passed over the ulcer bed removing non-adherent epithelial tissue until stable epithelium was encountered

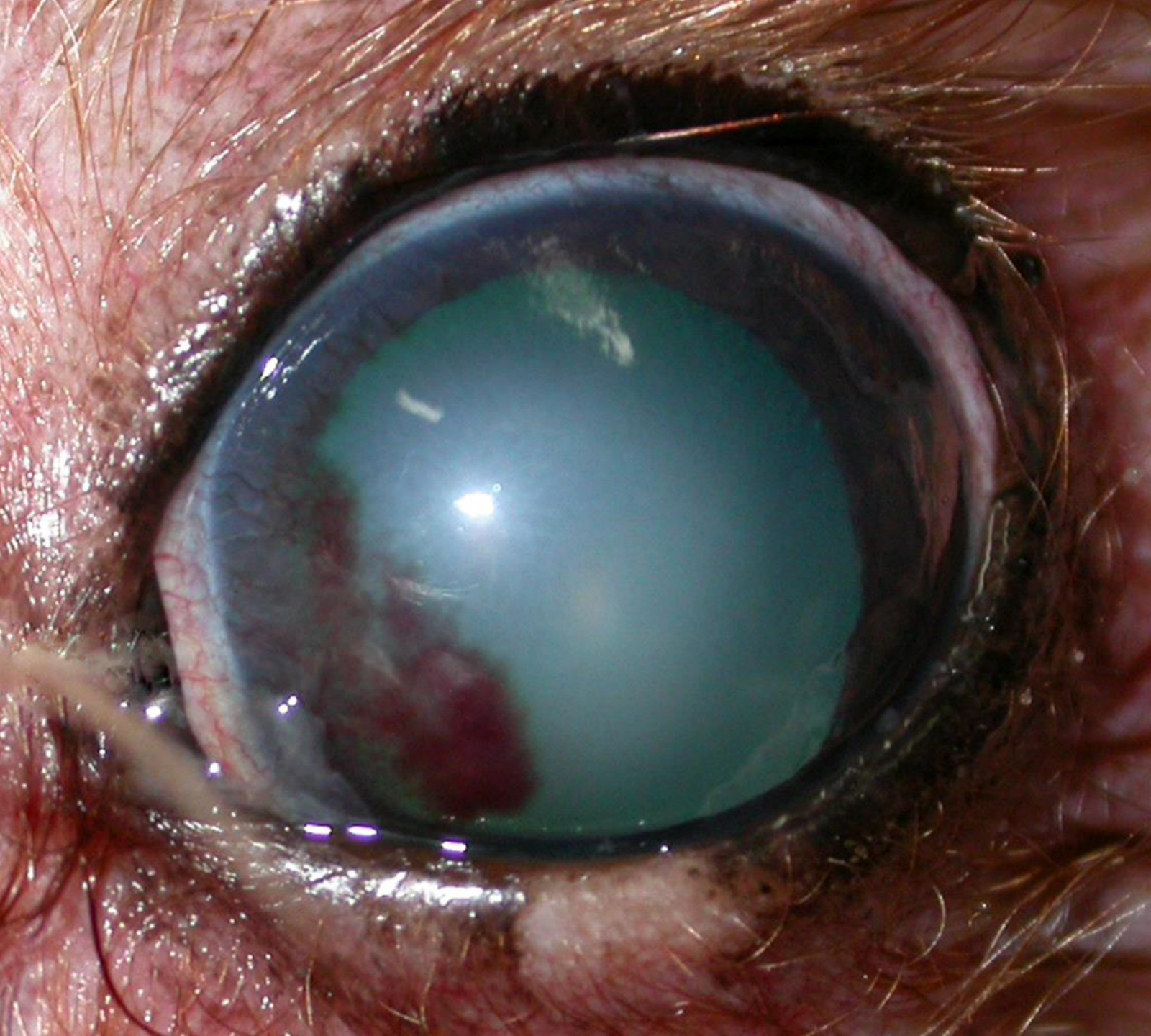
## Corneal Diamond Burr Debridement





# Medical Treatment For Debridement, Grid Keratotomy and DBD

- Topical and or systemic **antibiotic**
- Systemic **NSAID**
- Topical **Hyaluronic** products
- +/- **Tramadol**
- +/- **atropine** (may be contraindicated, **off label following the cascade**)
- Do not use topical anesthetic to promote patient discomfort
- **Elizabethan collars**



14 Days Post  
Surgery

## Prognosis For DBD

- 28/40 (**70%**) patients after **7\*** days healed.
- 37/40 (**92.5%**) patients after **15.5+/-5.5\*** days healed.
- The median time to **final recheck** examination was **19** days, all cases resolved by the third and final recheck examination.
- 5/40 (**12.5%**) require a **second procedure**.
- None require a superficial keratectomy.
- One case develop a **suspected bacterial Keratitis**. (1)
- \*median time

## Prognosis For GK

- All **52** cases **healed**.
- 44/52 (**87%**) heal with **one procedure**.
- **8 cases** require a **second procedure**.
- The median 11.5 days.
- **75%** healed by the first visit at **10-14 days**.(2)

## Complication of a GK

- 2 cases develop **corneal oedema**, after medication it resolves
- 2 cases developed **idiopathic persistent corneal erosion** adjacent to the surgical site
- Corneal **perforation**
- **Infection**
- Permanent **scar** formation
- **The use of GA enables the surgeon to perform the GK with more even depth and distribution.** As there is a risk of permanent scar formation, the depth of stromal micro-incision is of importance, and reduces corneal perforation(2)



# Prognosis for Debridement

**16/19** cases healed in a median **21.5** days.

**3 cases** did not heal after **1-2 months** of repeated debridement at **7-10 day** intervals.

Treated with **superficial keratectomy/DBD**, **2** healed **within 7 days**, and the other case require 18 days to heal.

**63%** healed with only **one** procedure but only **25%** had healed by the first revisit at **7-10** days.(2)

# Post Op Management

Healing can happen by:

Epithelial sliding and no vascularization

Get a marked vascular reaction, with overt granulation tissue. This can be alarming to the owner and they must be informed!

Once ulcer has healed, the vascular reaction and granulation will subside in the next 2-4 weeks

# Prognosis



Is good



Healing will occur eventually



Owner needs to be aware it can be a bilateral condition and recurrences can occur in either eyes!

# Summary



Initial client  
education



Careful  
Debridement



Planned  
treatment regime



Regular  
reassessment



Cut-off point for  
referral

# Telemedicine ophthalmology service

- We offer **FULL OPHTHALMOLOGY TELEMEDICINE SERVICE** with virtual video consultations.
- Working together with vets we aim to provide a **treatment plan** to manage your cases effectively.
- Keep your cases **in-house**.
- Reduce **waiting time** for seeing an ophthalmologist.



# Telemedicine ophthalmology service

- Guiding** vets who need help with eye cases.
- Save patients' eyes** and improve their quality of life.



# Services We Provide



Vet to vet services



Ophthalmology Telemedicine Report



Ophthalmology Telemedicine Consult

# How To Refer A Case

-Go to

[www.vetonline.co.uk/ophthalmology-telemedicine-get-started](http://www.vetonline.co.uk/ophthalmology-telemedicine-get-started)

-Fill out the referral form

-I will contact you back to arrange a telemedicine consult





# Reference

- Management of spontaneous chronic epithelial defects in dogs with diamond burr debridement and placement of a bandage contact lens: *Veterinary Ophthalmology* (2013) 16,2,83-88.
- Result of grid keratotomy, superficial keratectomy and debridement for the management of persistent corneal erosions in 92 dogs: *Veterinary Ophthalmology* (1998)1,233-238.
- *Small Animal ophthalmic surgery*: Kirk N. Gelatt & Janice P. Gelatt: 2003: 130.
- *Small Animal Ophthalmology: Saunders solutions in veterinary ophthalmology*: Sally M Turner: 2008:125-132.
- Pictures are curtesy of Dr David Williams

# Case Discussion

What  
Would You  
Do?



What  
Would You  
Do Next?



Result



