Non-healing ulcer, another SCCED?

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What is a non-healing ulcer?

- Definition
  - A corneal ulcer that does not heal within 7-10 days
- Ophthalmic causes
- Non-ophthalmic causes

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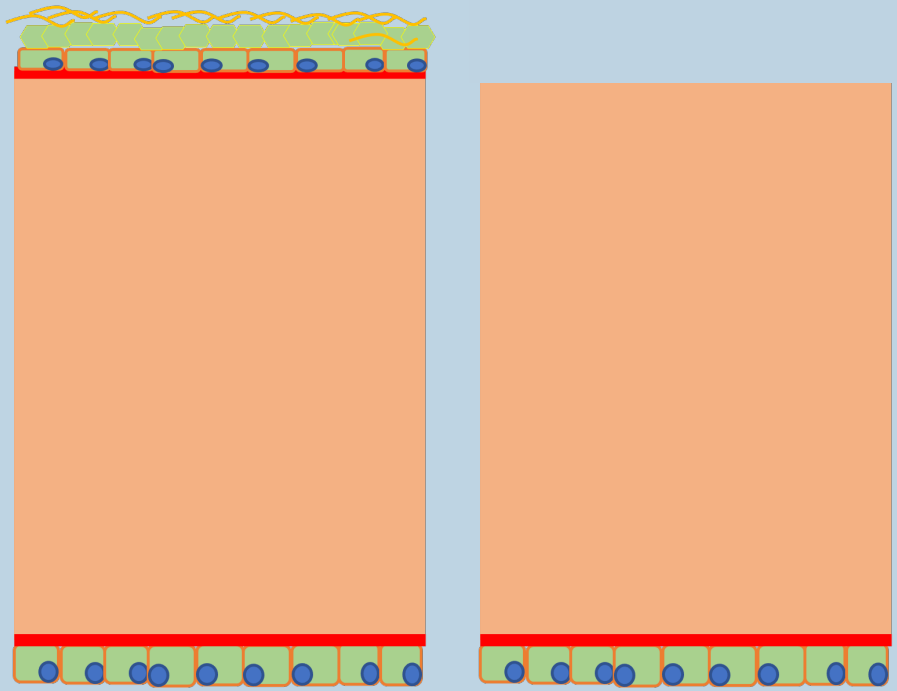
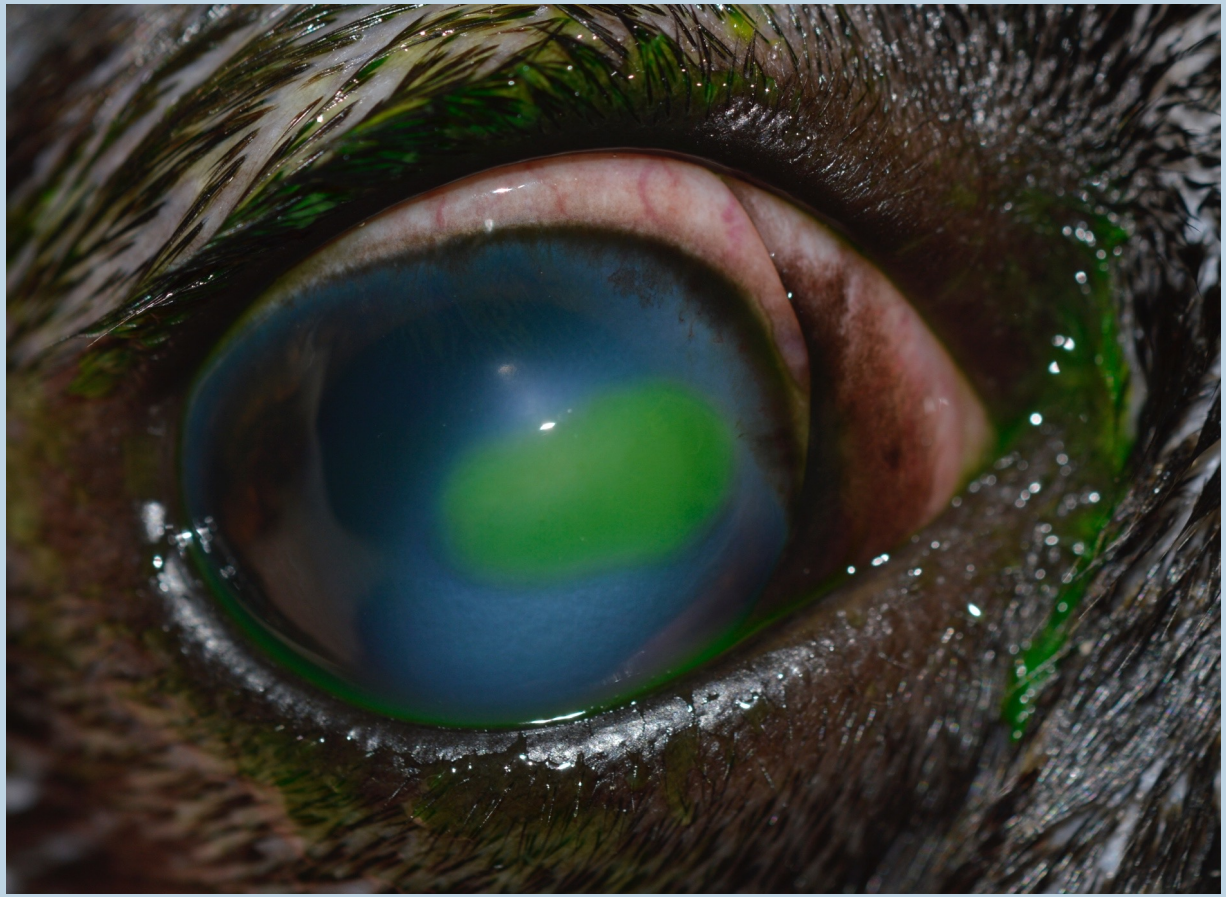
Causes of non-healing ulcer

- Ophthalmic:
  - KCS
  - SCCEDs
  - Sequestrum
  - Calcific keratopathy
  - Trauma:
    - Foreign body
    - Ectopic cilia
    - Distichia
    - Entropion
  - Orbital disease
    - Chronic exposure
  - Post ophtho disease (denervation)
    - Post-proptosis
    - Post-ICLE

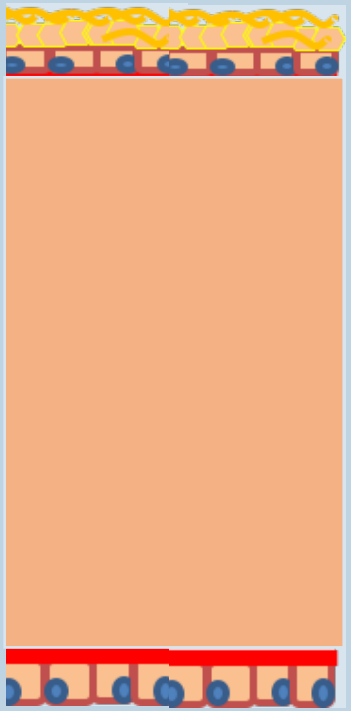
- Non-ophthalmic
  - Neuroparalytic
    - Eyelid paresis/plejia
    - Cats Vs dogs and its TEL
    - CnVII – facial malfunction
  - Neurotrophic
    - Cn V (trigeminal malfunction)

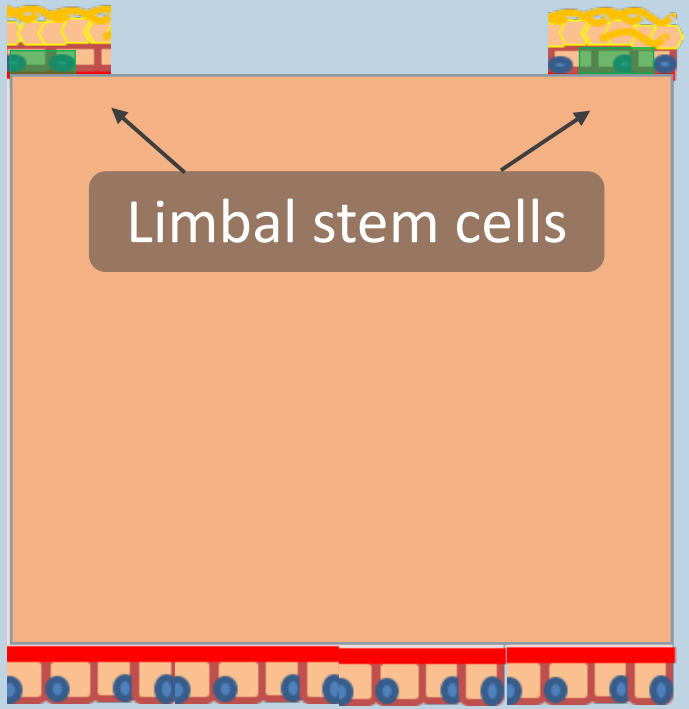
Superficial corneal ulcer

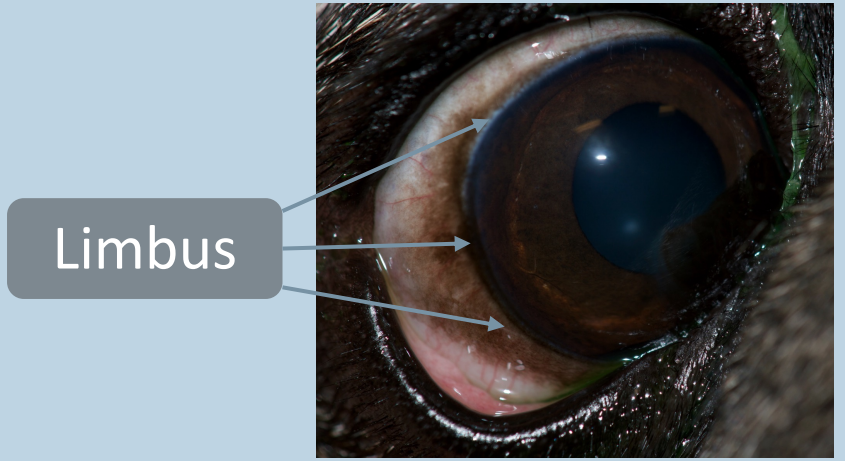


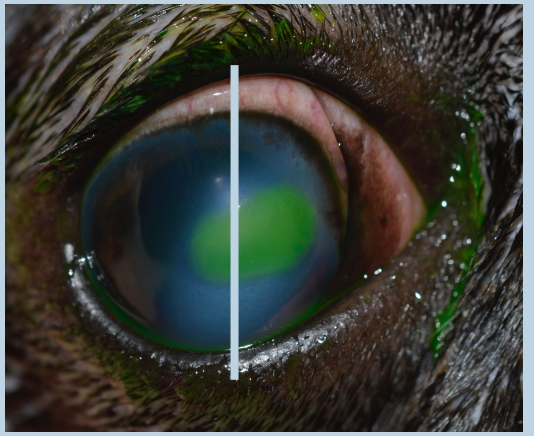


Superficial corneal ulcer

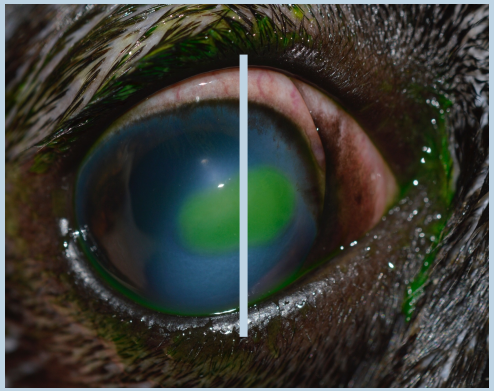




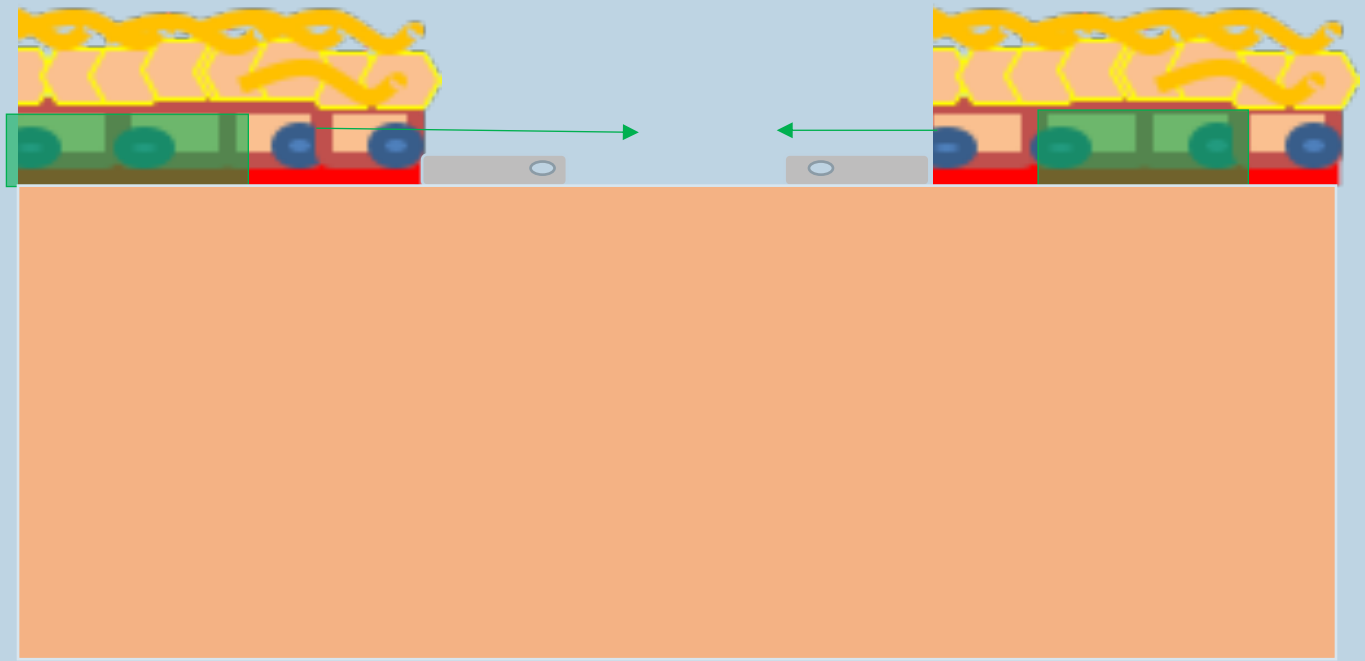




Superficial corneal ulcer - Healing

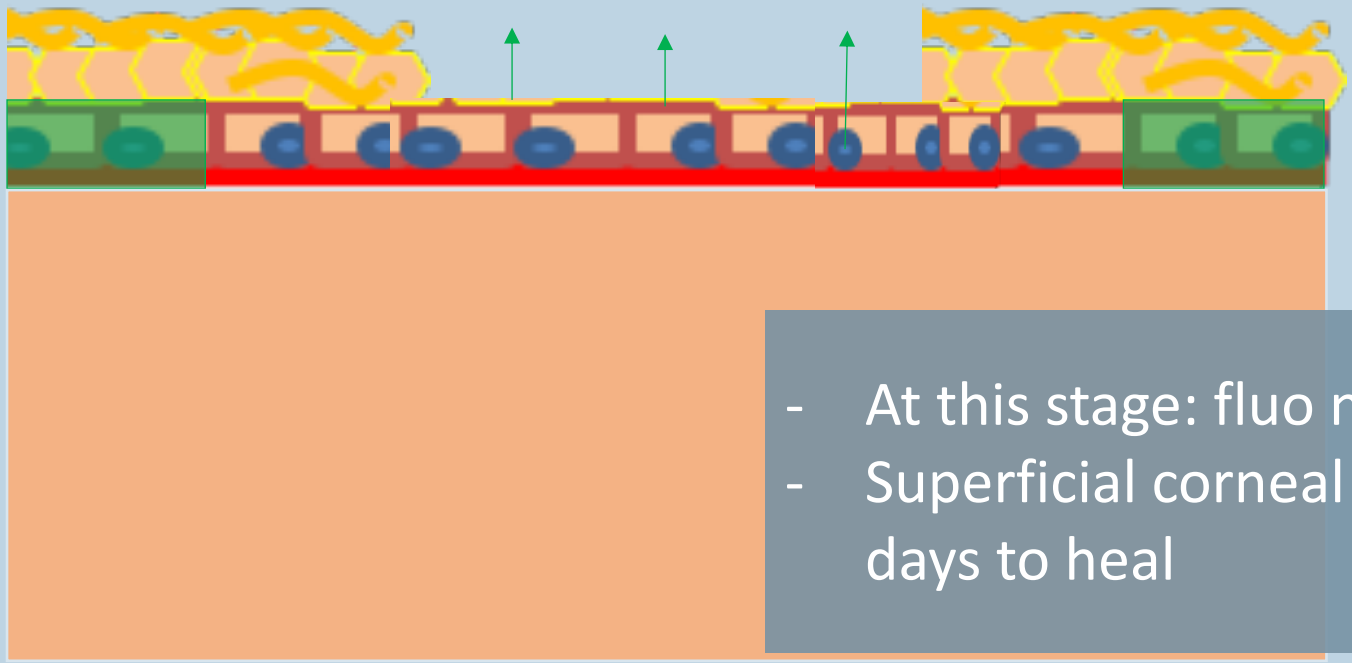


Limbal stem cells



Superficial corneal ulcer - Healing

Limbal stem cells

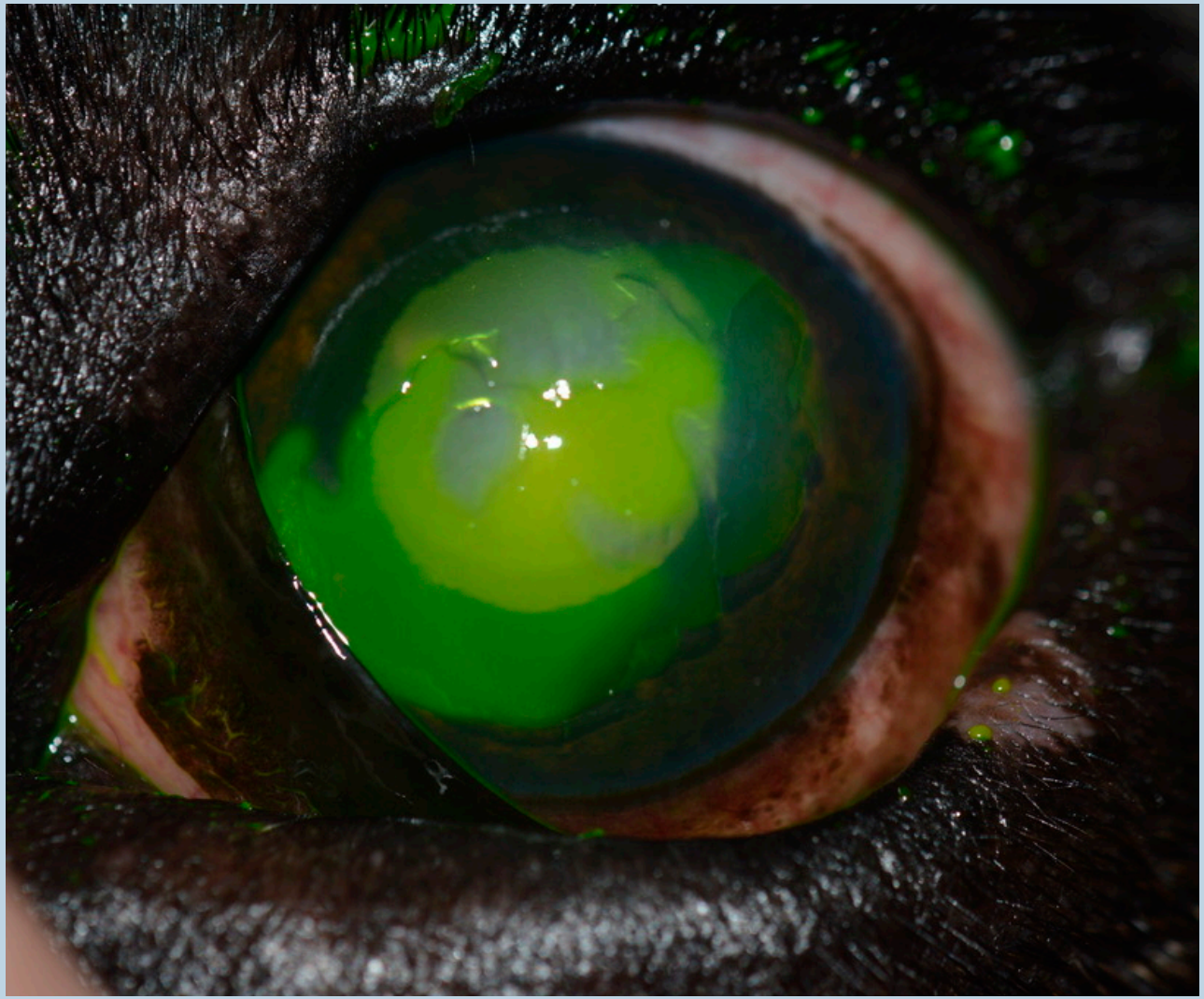


- At this stage: fluo negative
- Superficial corneal ulcer takes 7-10 days to heal

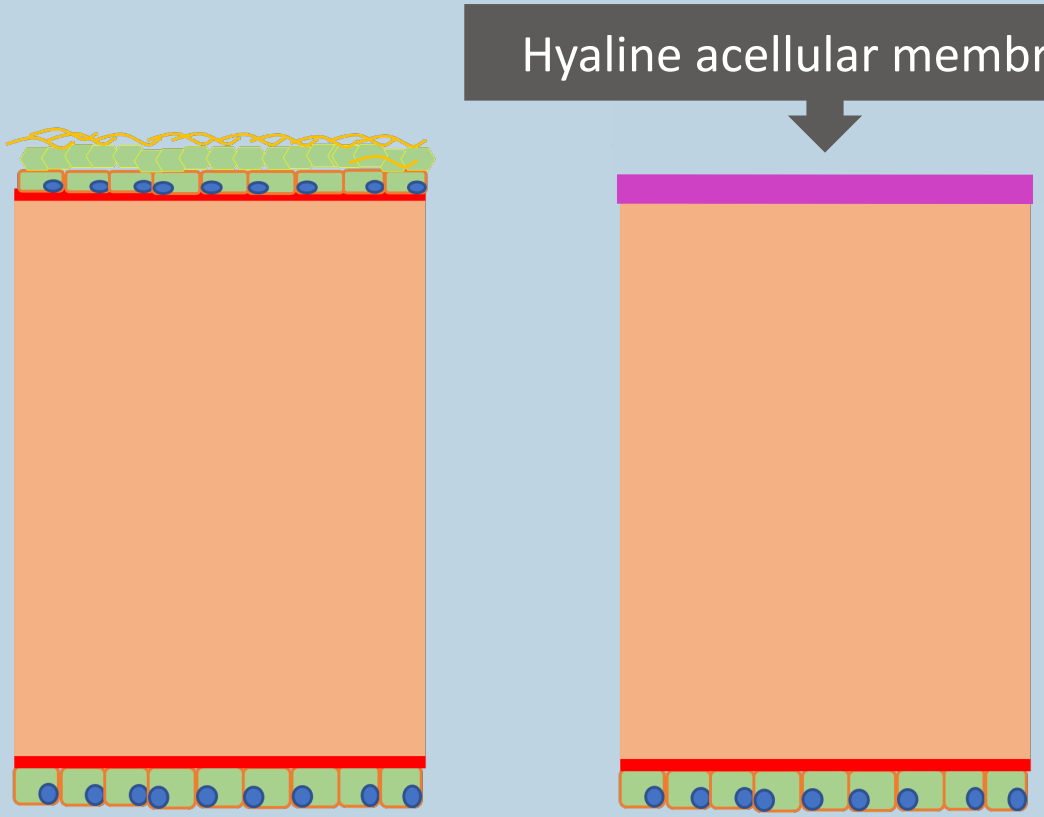
SCCEDs

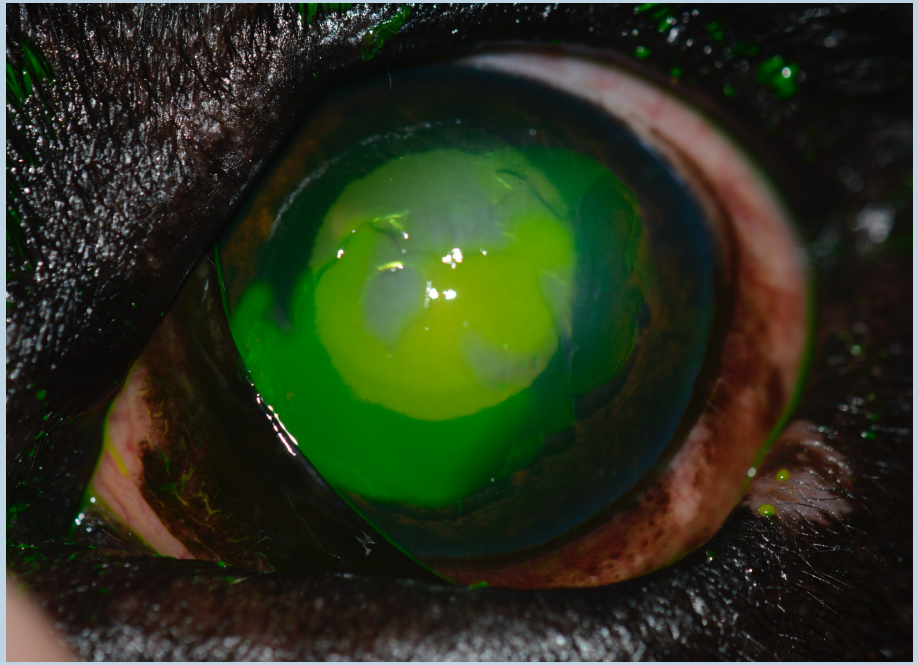
Hallmarks of SCCEDs

- Loose epithelial edges
- No irritant/trauma/foreign body
- Not infiltrated



SCCEDs





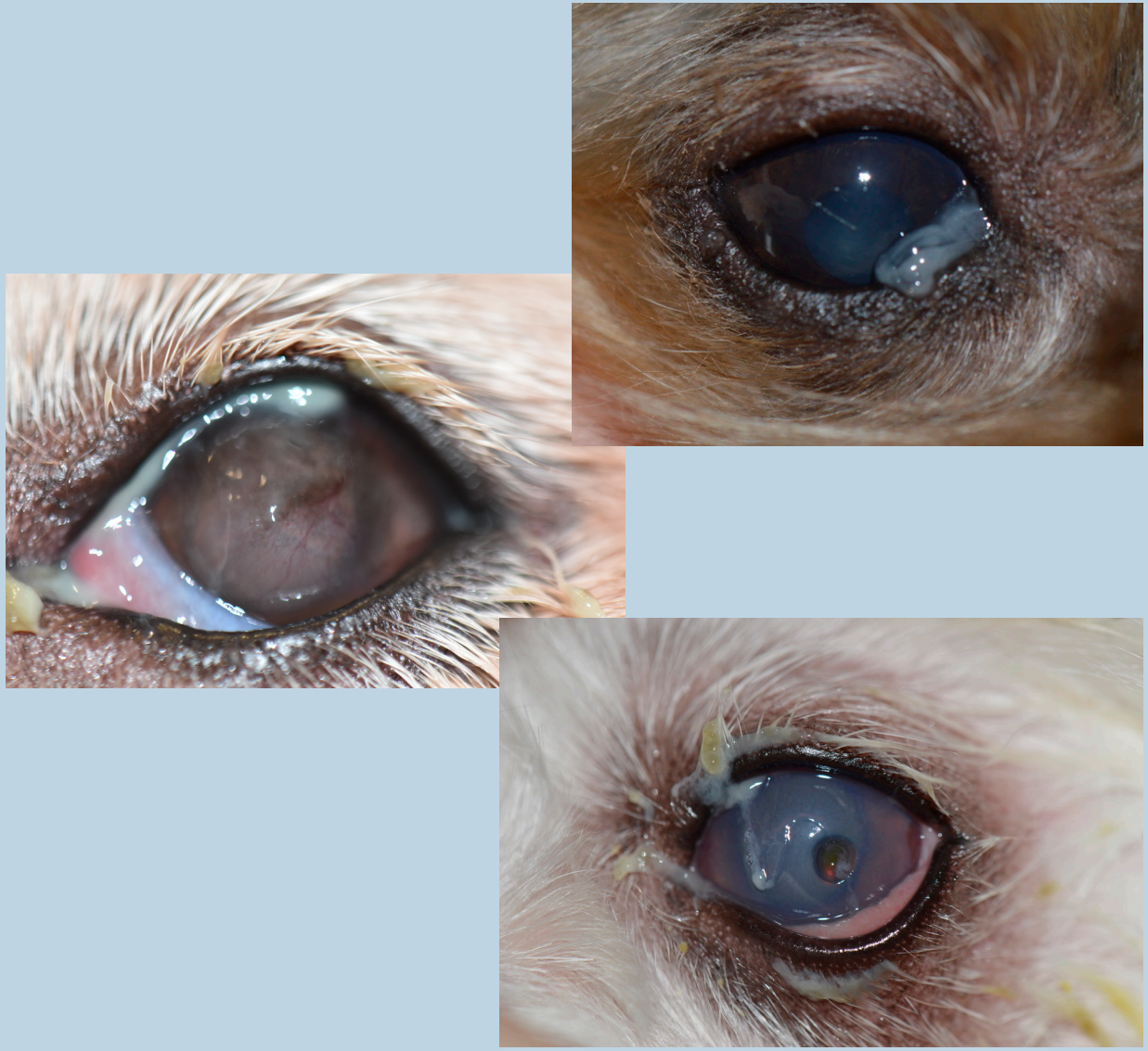
- Debridement, grid keratotomy, diamond burr debridement or superficial keratectomy in order to remove, at least, partly the hyaline membrane
- Then healing occurs in approximately 10 days

SCCEDs

- Consider sedation and use of speculum
- Topical anaesthetic
- Prep de eye: 1% ocular surface, 10% eyelids
- Mechanical (cotton bud) debridement + DBD – 40 seconds aprox
- Fluo stain to check no loose epithelium is seen
- Atropine once
- At home:
  - Broad spectrum antibiotic
  - N-acetylcysteine
  - Oral NSAIDs if possible for 2-3 days

KCS

- Lack of ferritine (antiseptic)
- Reduced nourishing of the ocular surface
- Increased inflammatory components ocular surface
- Corneal ulcers and mucopurulent discharge



Sequestrum

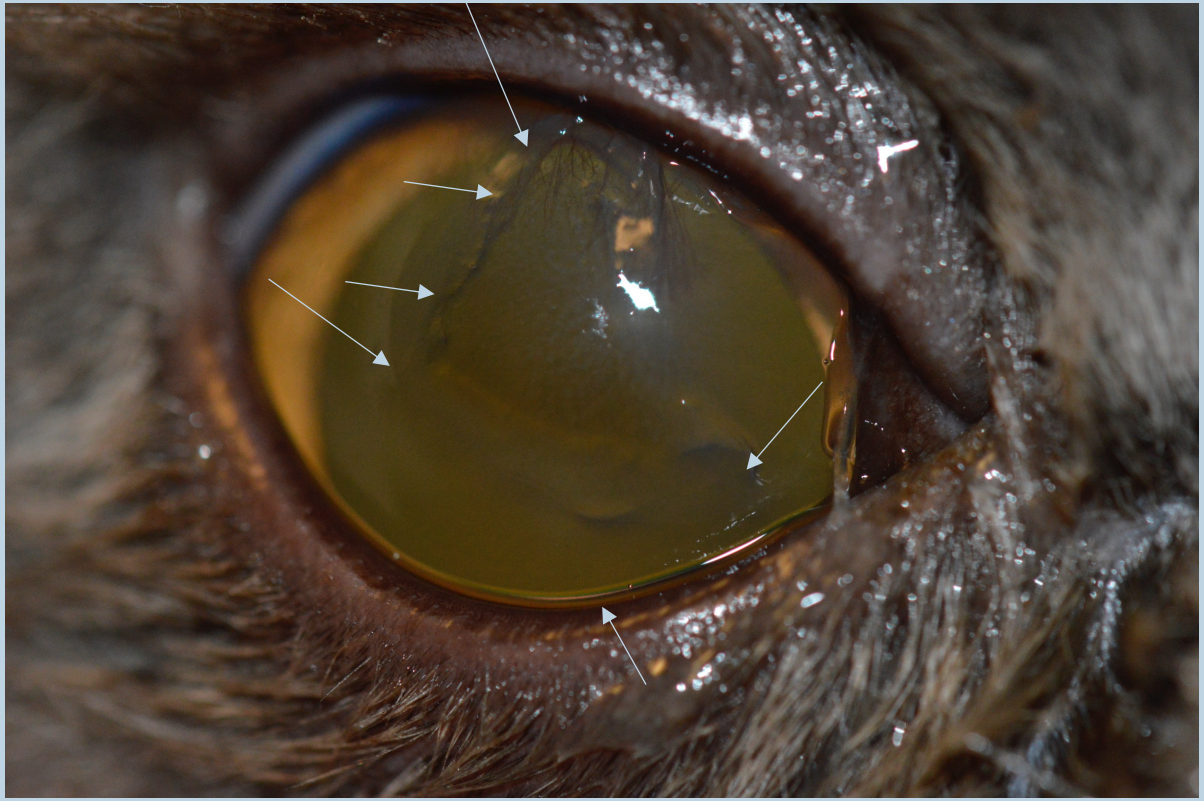
- Either dark or pale sequestrum will cause a non-healing ulcer
- Identification of more suttle changes can be challenging
- Burring?
- Superficial keratectomy

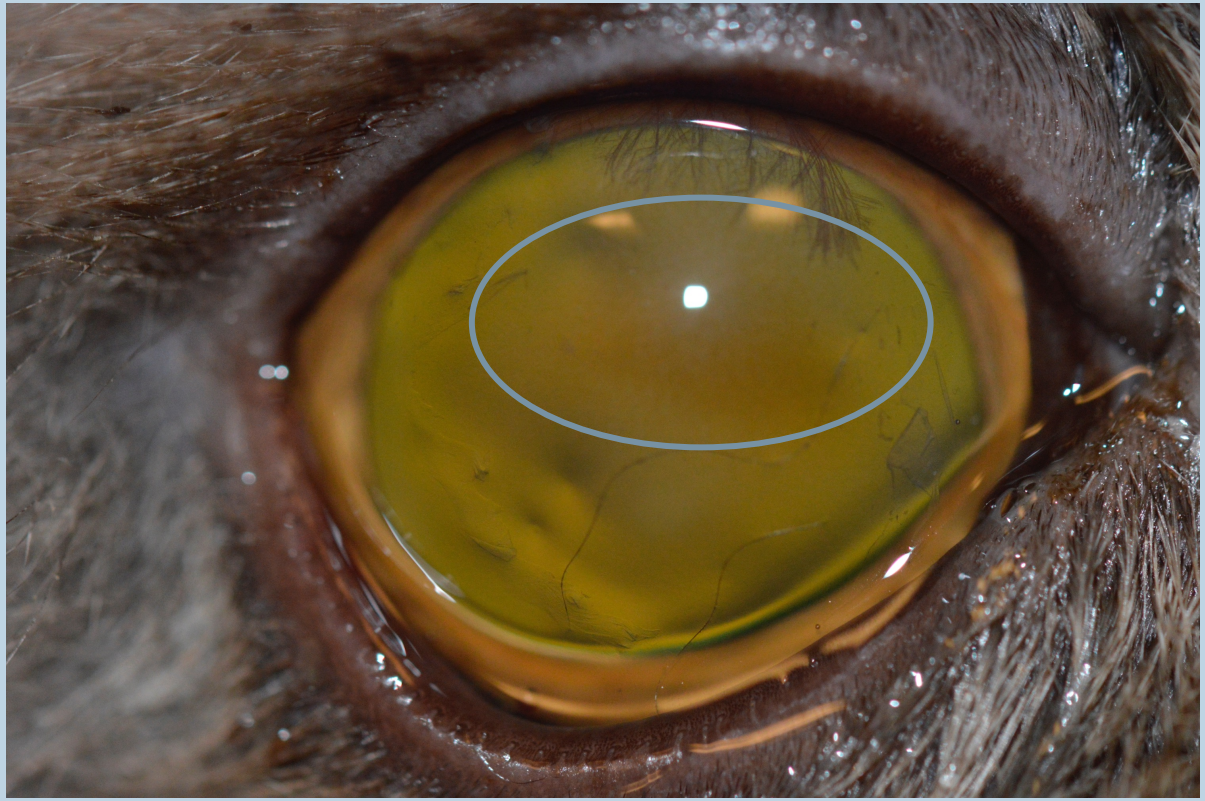
Incipient sequestrum

- Previous history: non-healing corneal ulcer
- Superficial epitelial ulcer with loose edges
- Painful
- Epiphora
- Check in detail the ocular surface
- Rule out: chronic irritants: distichia, entropion, ectopic cilia
- In some cases only found in histopathology
- **The epithelium cannot heal if the stroma underneath is not healthy**

Incipient sequestrum

Loose epithelial edges



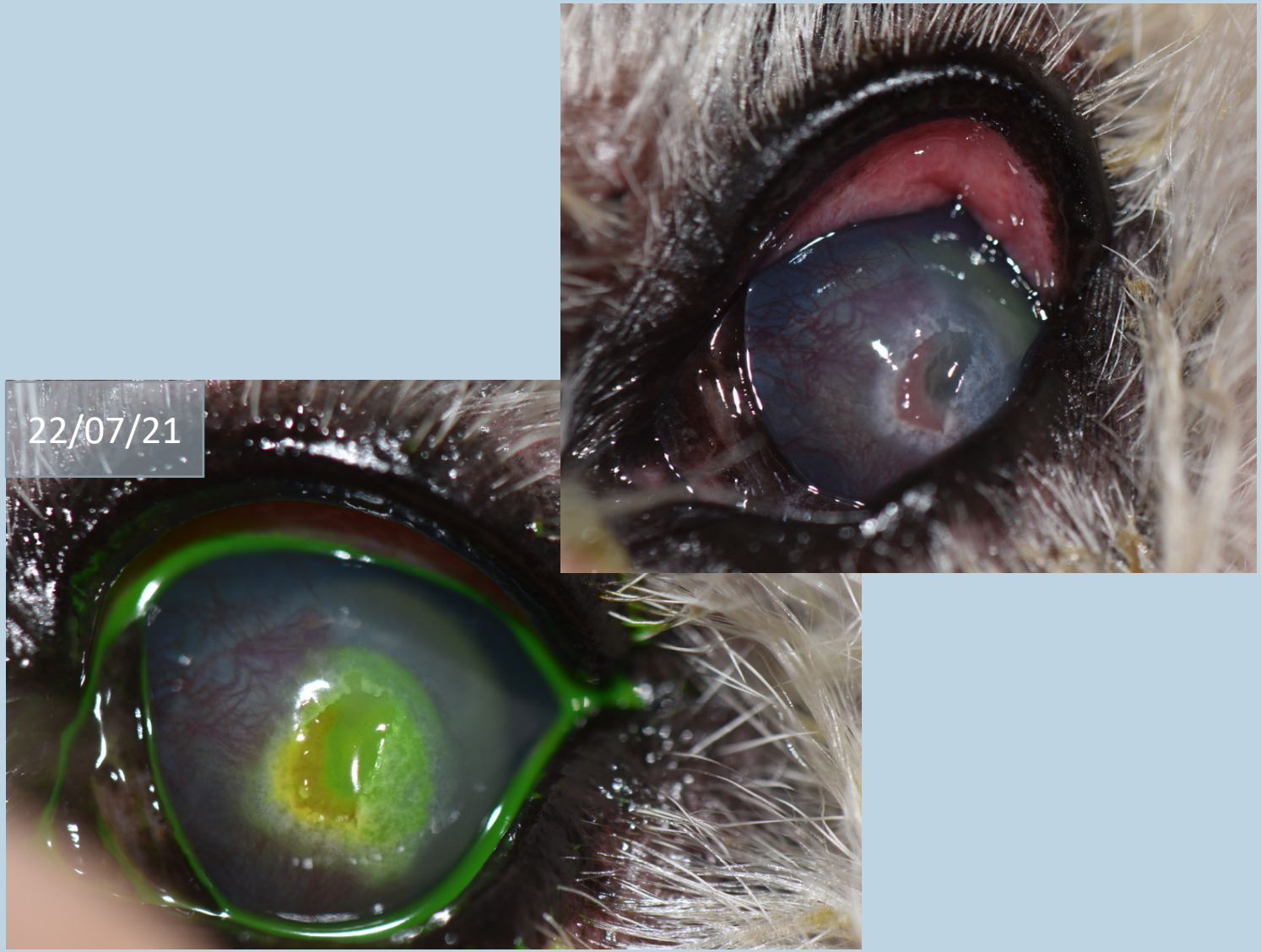


Calcific keratopathy

- Also known as calcareous degeneration (Sansom VO2010)
  - Band keratopathy ?
- Related to Cushing disease
- Elder patients
- Associated with stromal loss – deep corneal ulcers
- In some cases devoid of blood vessels
- Treatment:
  - DBD (Nevile VO 2017)
  - DBD + EDTA 2% (Anastassiadis VO 2022)

Unkass

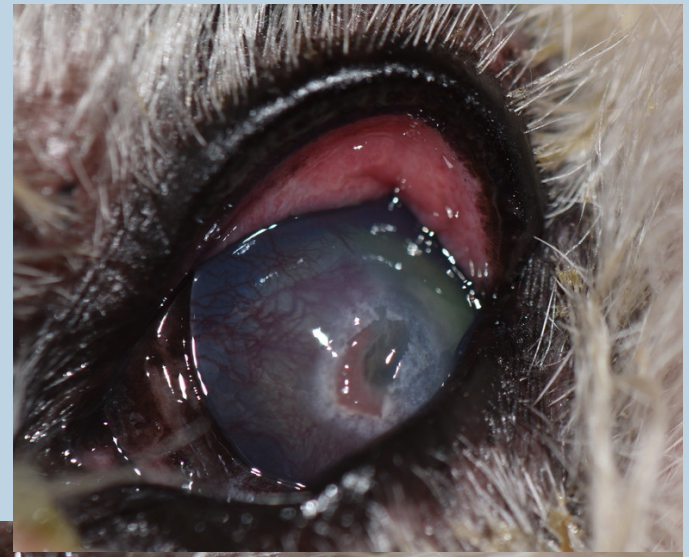
- WHWT
- 15yo, F spayed
- Acute deep corneal ulcer
- Severe lung disease

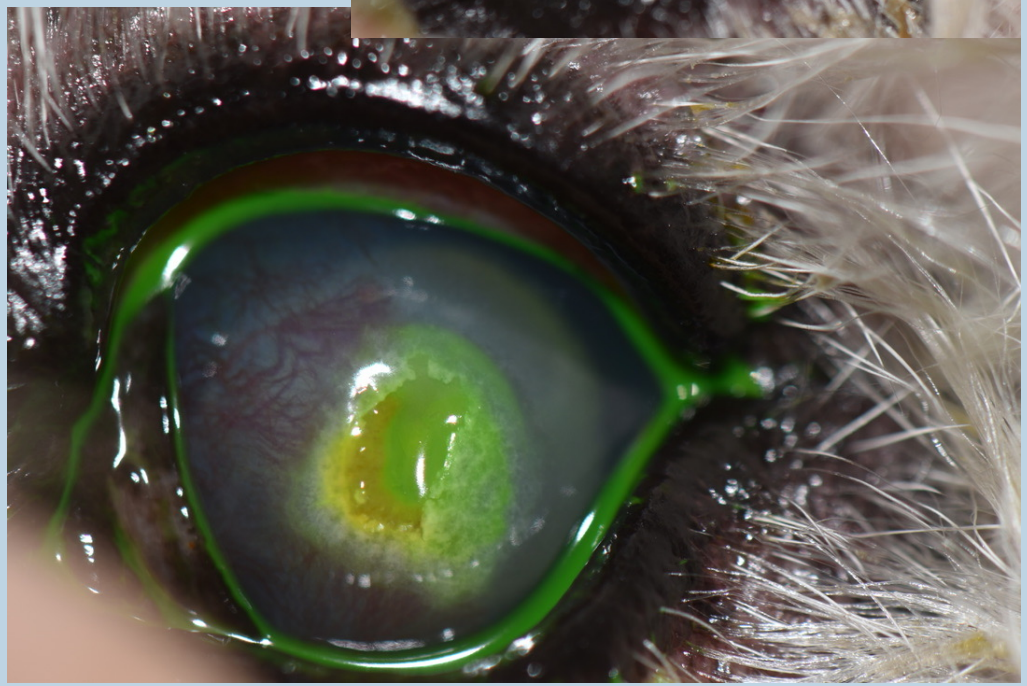


Unkass – Treatment plan

- Surgery not an option and:
  - Blood vessels nearby
- Atropine in consult
- Serum: 1 drop every 2-3 hours
- Ofloxacine: 6 times/day
- EDTA 2% BID OU

- Recheck: en 24h





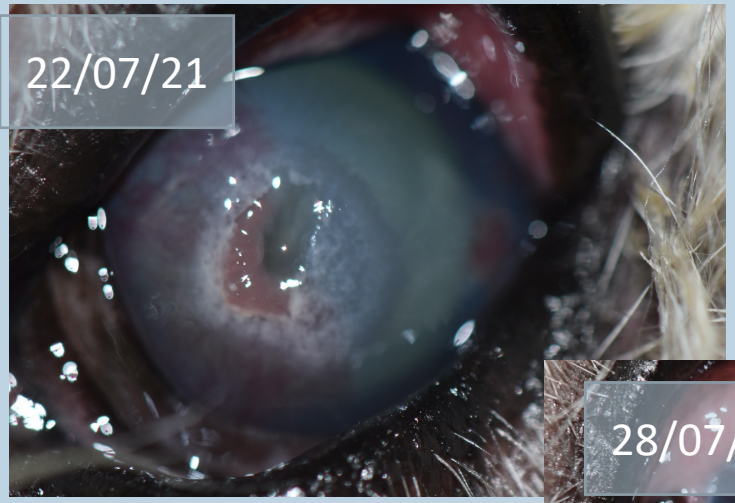
Unkass – Treatment plan

- Granulation tissue is filling in the defect
- Remodeling stromal loss
- Serum 4x
- Ofloxacine 4x
- EDTA 2% BID OU
- Recheck: 10 days

Unkass – Treatment plan

- Rev: more comfortable, nearly fluorescein negative
- Serum: stop
- Ofloxacine: stop
- EDTA 2% BID OU

- Recheck: 2-3 weeks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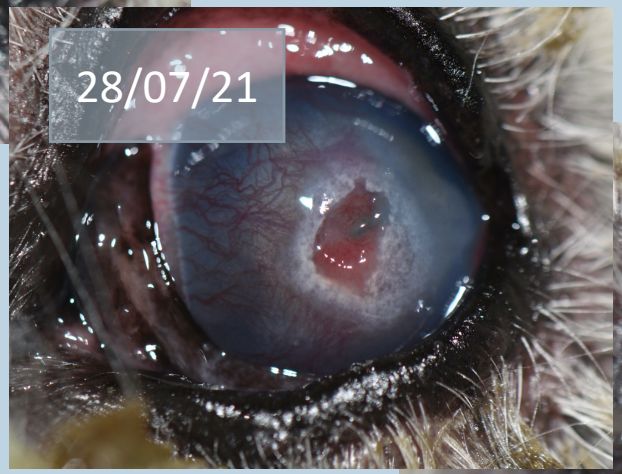
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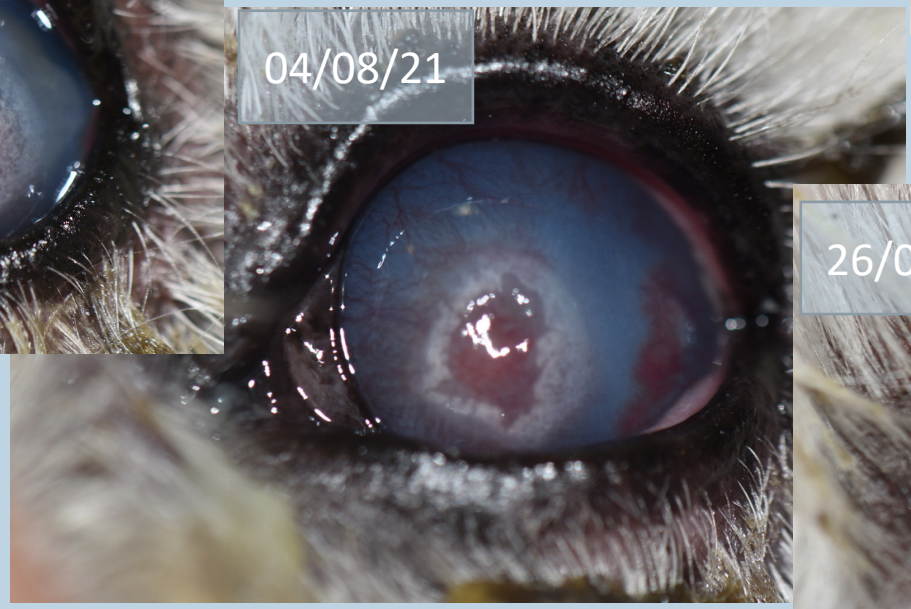
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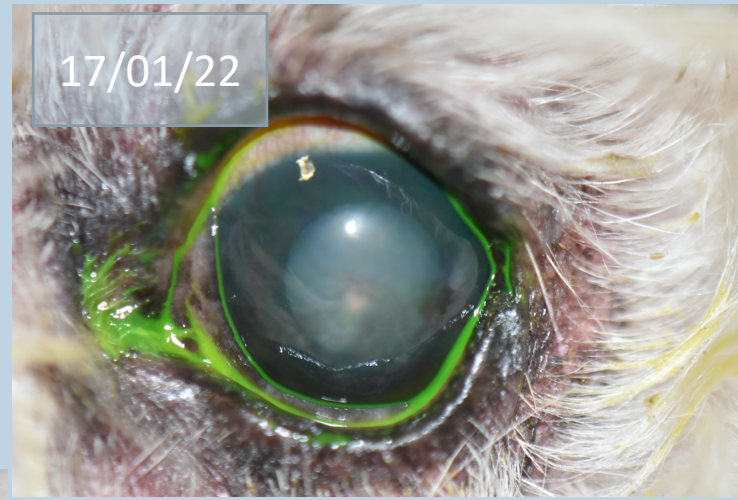
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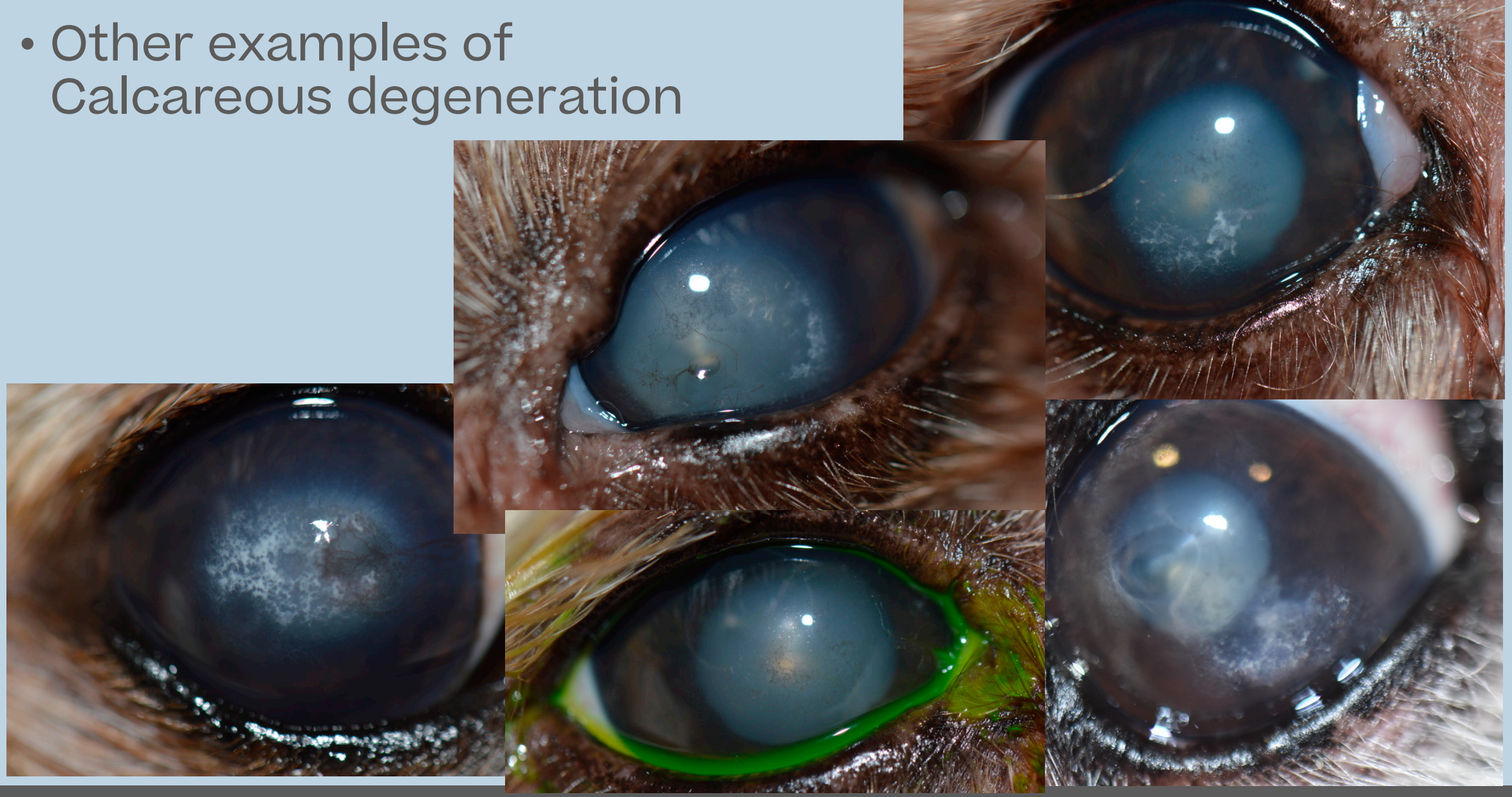
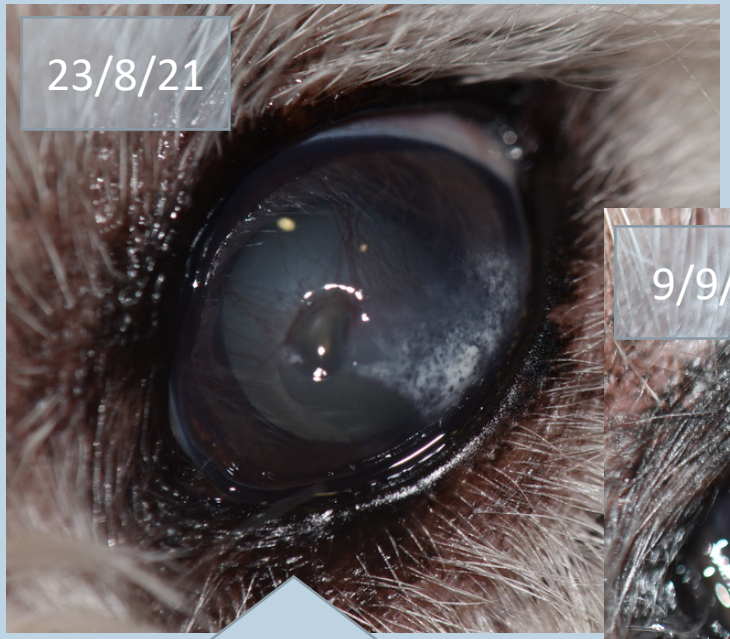
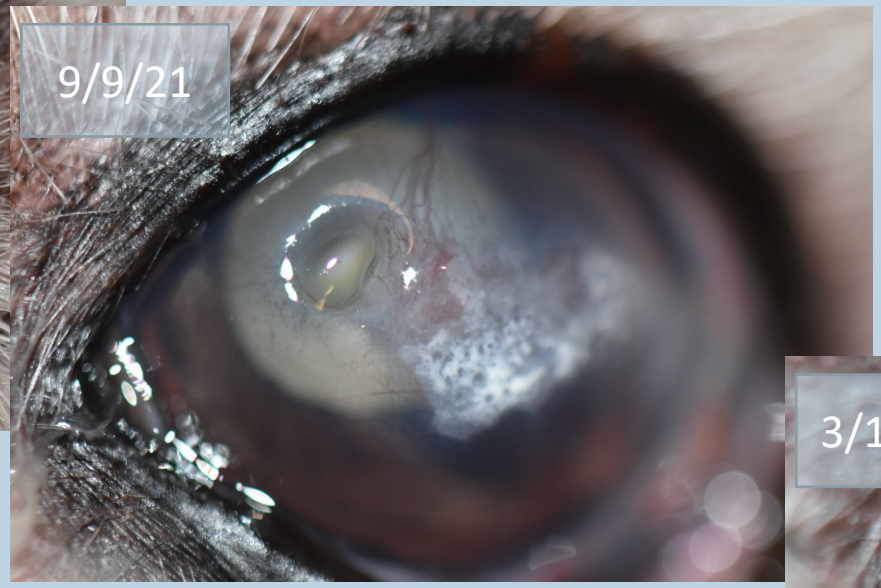
- Other examples of Calcareous degeneration



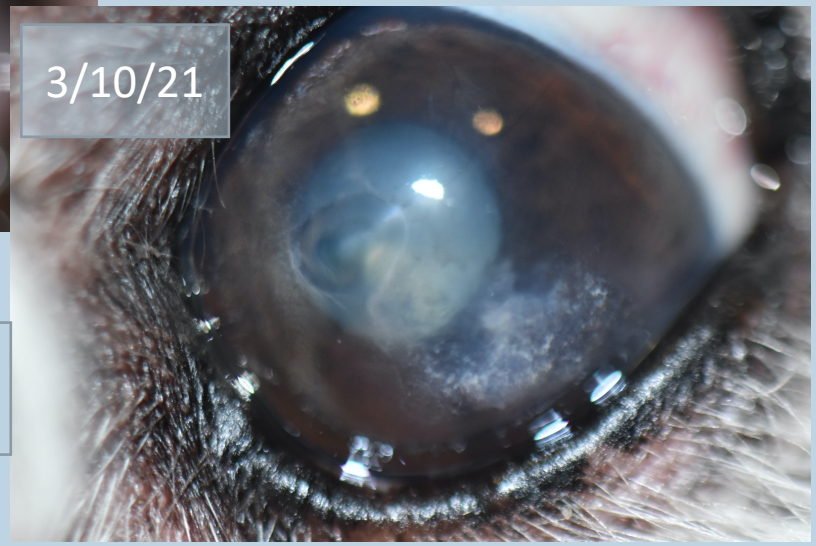
Laila, another medically managed case



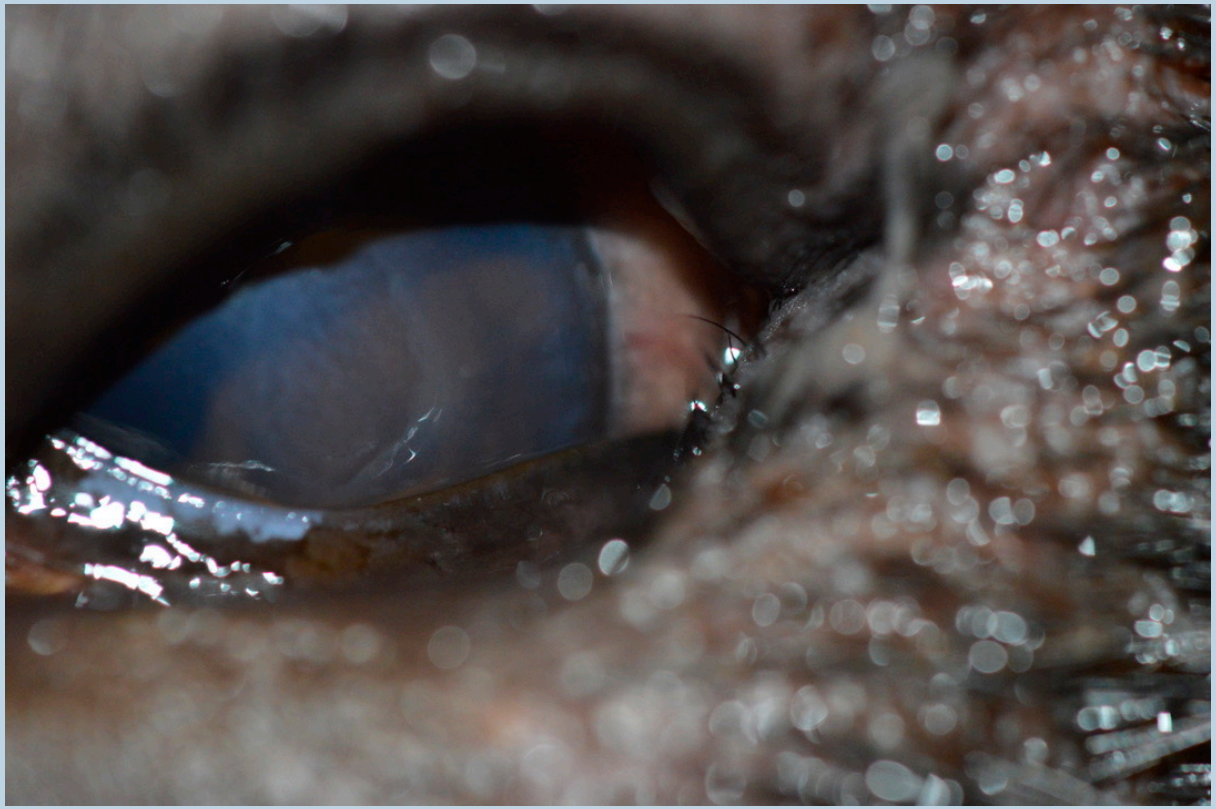
Fluo positive
- Tobrex 6x OS
- Serum . 6x OS
- Atropine SID 3d OS
- EDTA 2% OU



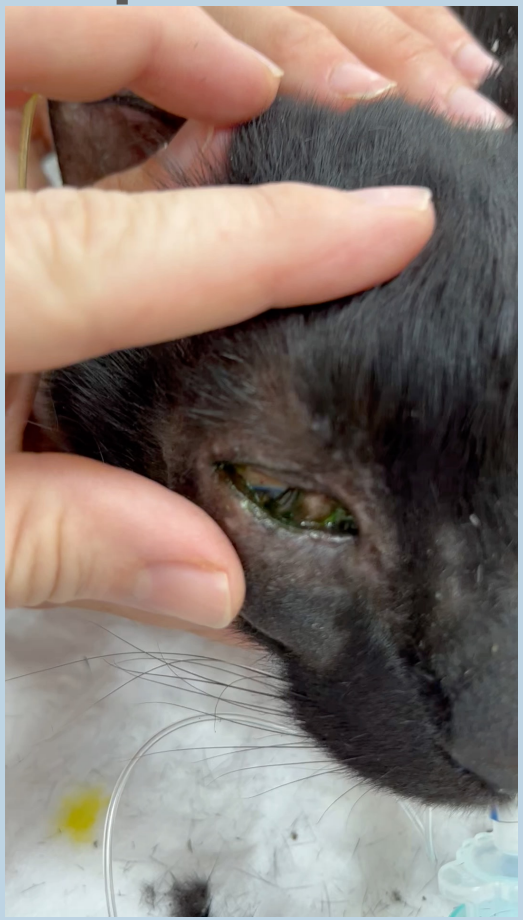
Fluo negative
Stop Tobrex + serum

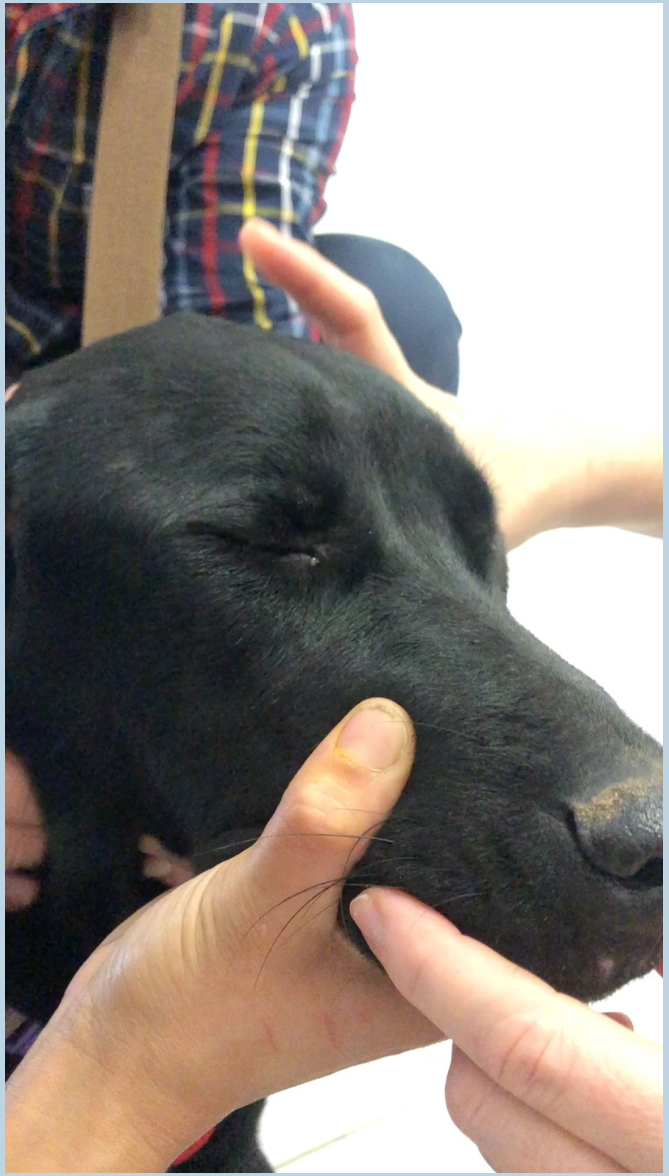


Entropion

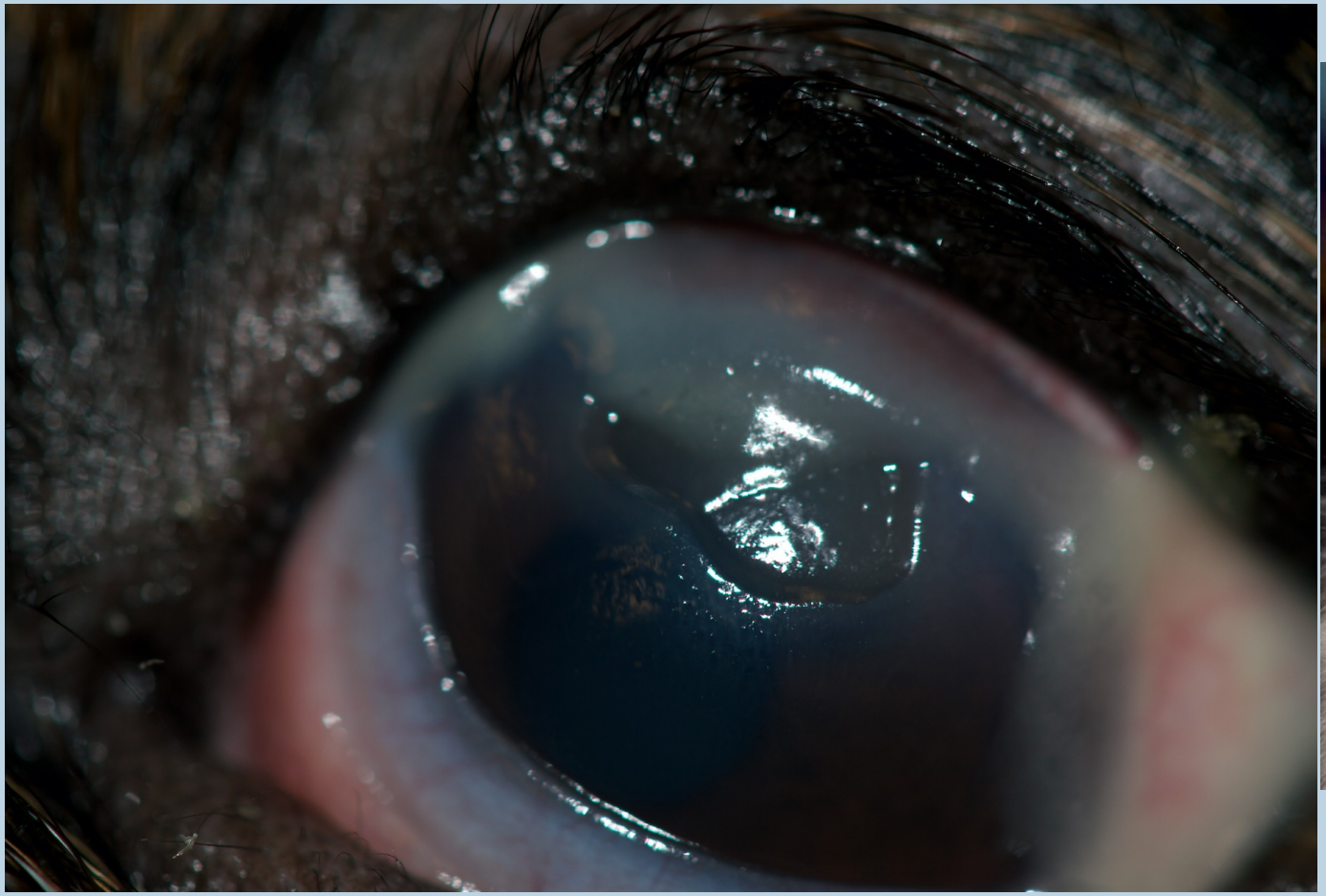


Entropion

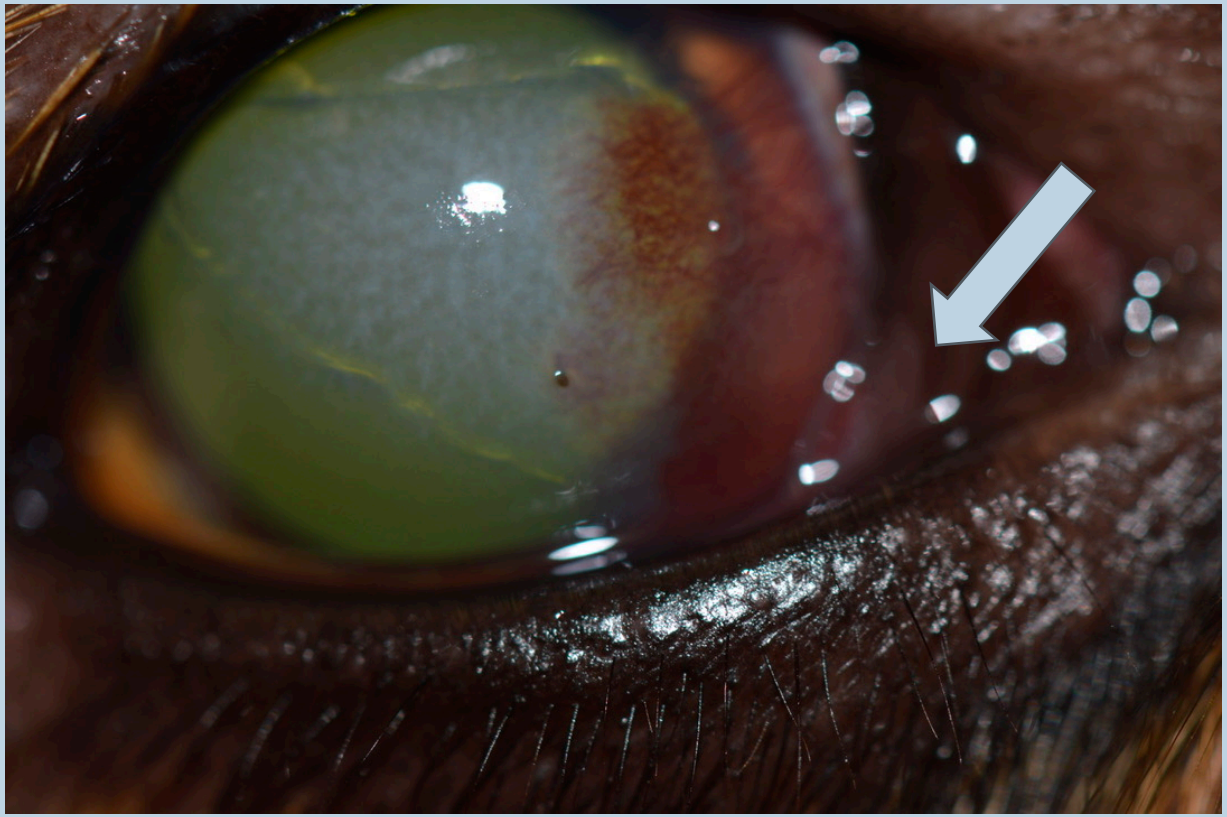




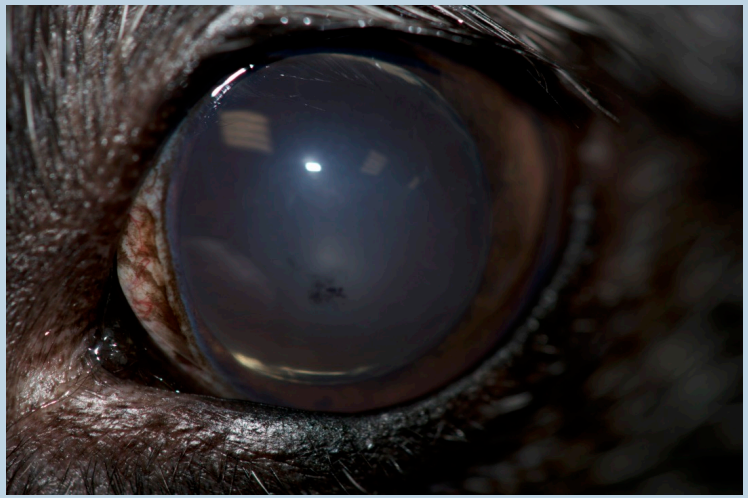
Neurogenic KCS – Remember Larry?

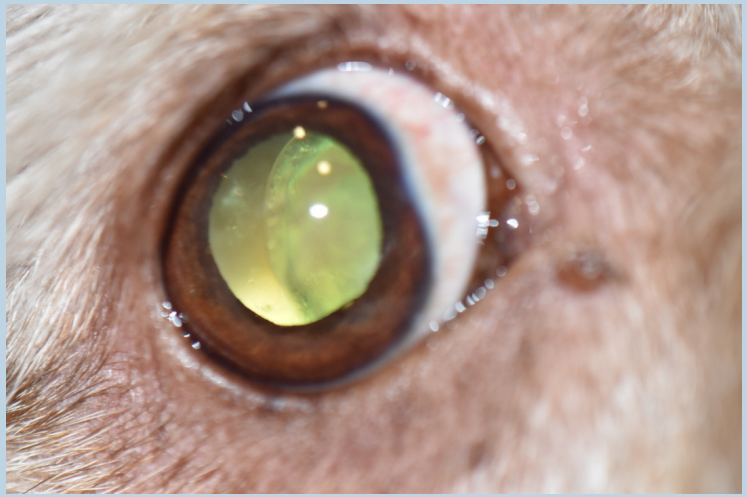


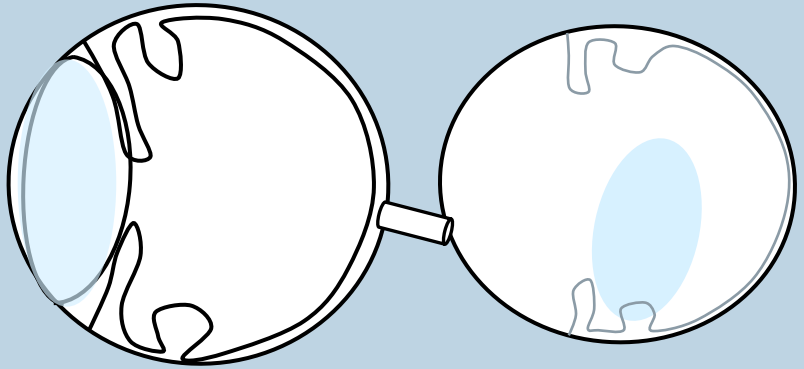
Foreign body

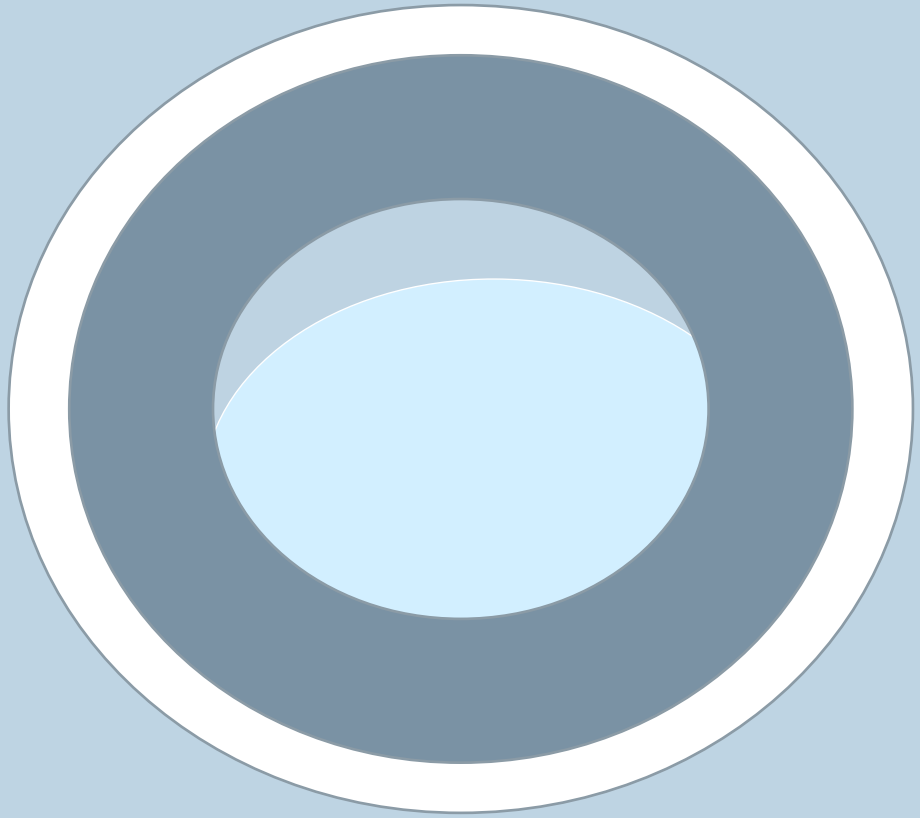


- Small FB can be overseen and patient treated for corneal ulceration









Outcome of ICLE?

- Why so few studies?
- Khaled et al. – Vision loss:
  - 18/25 anterior lens lux
  - 5/15 lens subluxation

RESEARCH Open Access

Lens-related ocular emergencies (LROE) in dogs: treatment and visual outcome after late presentation of 90 eyes

Khaled M. Ali[1] and Ayman A. Mostafa[1*]

Abstract

Background Lens-related emergencies need immediate medical intervention to reduce complications, minimize pain, and improve the chances of retaining vision. The present study aimed to demonstrate the common lens-related ocular emergencies in dogs and evaluate the short-term outcomes after the treatment of these cases. Sixty dogs (90 eyes) of different breeds were presented with unilateral (30 eyes, OD = 18, OS = 12) and bilateral (60 eyes) ocular abnormalities related to crystalline lens injury. Clinical, ultrasonographic, and laboratory examinations were achieved. Different treatment protocols were conducted after a complete ophthalmic examination and the associated clinical outcomes were evaluated.

Results Mean (± SD) age of dogs at initial evaluation was 3.65 (± 2.4) years (range, 1-12 years). Lens luxation and subluxation were diagnosed in 45 eyes (25 with anterior lens luxation, 15 with subluxation, and 5 with posterior lens luxation). Lens-induced anterior uveitis without ocular hypertension ($n = 25$ eyes), lens-induced uveitis with secondary glaucoma (uveitic glaucoma) ($n = 15$ eyes), and lens capsule disruption ($n = 5$ eyes) were also diagnosed. The vision was lost in all 5 eyes with posterior lens luxation and secondary glaucoma (100%), 18/25 eyes with anterior lens luxation (72%), and 5/15 eyes with lens subluxation (33.3%). Vision impairment was also identified in 10/25 eyes (40%) with unresponsive lens-induced anterior uveitis and in 5/5 eyes (100%) with traumatic rupture of the anterior lens capsule.

Conclusion Crystalline lens pathology can cause a wide variety of ocular emergencies that may result in blindness. Early diagnosis and appropriate treatment are crucial for handling lens-related emergencies in dogs.

Keywords Dogs, Glaucoma, Lens-related ocular emergencies, Luxation, Uveitis, Vision

Lens instability

- 155 eyes
- No significant difference in survival probability for retention of vision only based on the position of the lens
- Significantly increased success rate demonstrated when subluxated lenses were removed – 2.75 years postop:
  - Phaco 75% visual
  - ICLE 40% visual
- Preoperative hypertension no influence on median survival time BUT these eyes tend to develop retinal detachment and glaucoma more frequently than those normotensive preop
- Retinal detachment
  - ICLE 28%
  - Phaco 6%

Lens instability in the dog: A retrospective study of surgical results in 102 cases (155 eyes) (1994-2004)

S Manning[1], P Renwick[1], C Heinrich[1], P Cripps[2]
Willows Referral Service, 78 Tanworth Lane, Shirley, West Midlands B90 4DF[1]; University of Liverpool Veterinary School, Leahurst, Neston, CH64 7TE[2]

Purpose
To ascertain the success rate following the surgical management of lens instability, and to determine the influence of the position of the lens prior to surgery, the method of surgery and the presence of pre-operative ocular hypertension on the duration of vision and incidence of postoperative complications.
Methods
Records of dogs with lens instability presented between 1994 and 2004 were reviewed. Animals were included in the study if they underwent lens extraction either by intracapsular lens extraction (ICLE) or phacolentectomy following a diagnosis of primary lens luxation. A Kaplan-Meier survival analysis was selected for the statistical evaluation.
Results
155 eyes of 102 dogs were included. The survival analysis demonstrated no significant difference in the survival probability (for retention of vision only) based on the position of the lens when a comparison was made of anteriorly luxated, posteriorly luxated and subluxated lenses removed by ICLE, the median survival time approximating 2.04 years. A significantly increased success rate was demonstrated when subluxated lenses were removed by phacoemulsification, with 75% estimated to remain visual 2.75 years post-operatively compared with approximately 40% of ICLE managed subluxated lenses at the same time period. There was no evidence that the presence of pre-operative ocular hypertension had an influence on the median survival time for vision post-operatively; however these eyes did develop retinal detachment and ocular hypertension/glaucoma more frequently than those that were normotensive pre-operatively. Retinal detachment was seen in 28% of operated eyes that underwent ICLE compared with 6% that underwent phacolentectomy. 60% of eyes were lost to or treated for ocular hypertension/glaucoma following surgery.
Conclusions
A significantly greater long-term success rate for retention of vision was obtained following the surgical treatment of lens instability by phacolentectomy. A high incidence of post-operative ocular hypertension/glaucoma was associated with the surgical management of this disease, for which the aetiology is unknown.

BrAVO abstract 2007-2010?

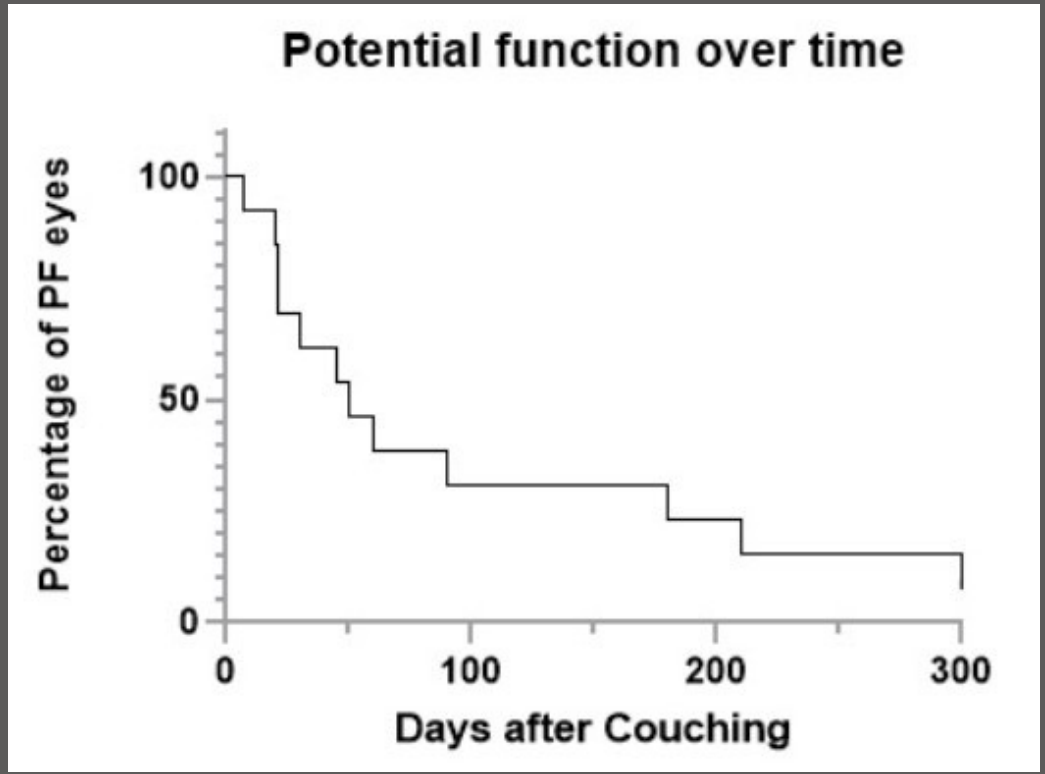
Treatment of lens luxation

- Anterior
  - Surgery
    - ICLE
    - Bimanual phaco
  - Couching
- Posterior
  - VR surgery?
  - Prostaglandin analogues BID-TID long term
- Time from onset ALL to vet might be relevant

Discouraging results of trans-corneal reduction (couching) of anterior lens luxation in 38 dogs, 41 eyes: retrospective study (2020-2023)

Juan Maestro[1], Laura Castilla[1], Màrian Matas[1]

1.- Memvet – Centre de Referència. Palma, Illes Balears. Spain

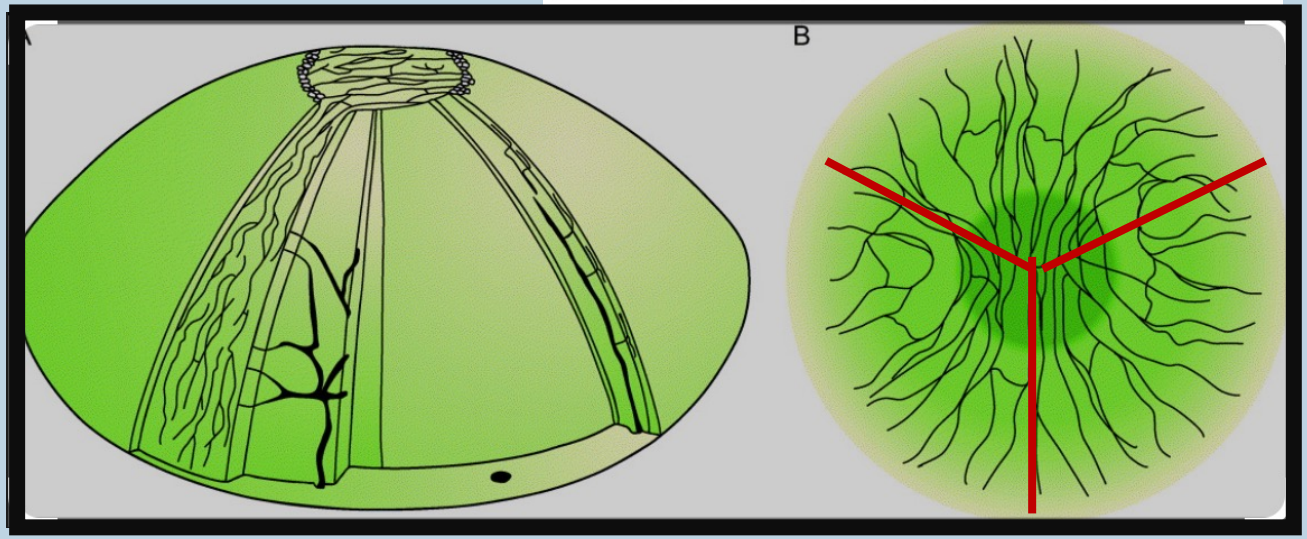


Post ICLE

Review

Corneal nerves: structure, contents and function

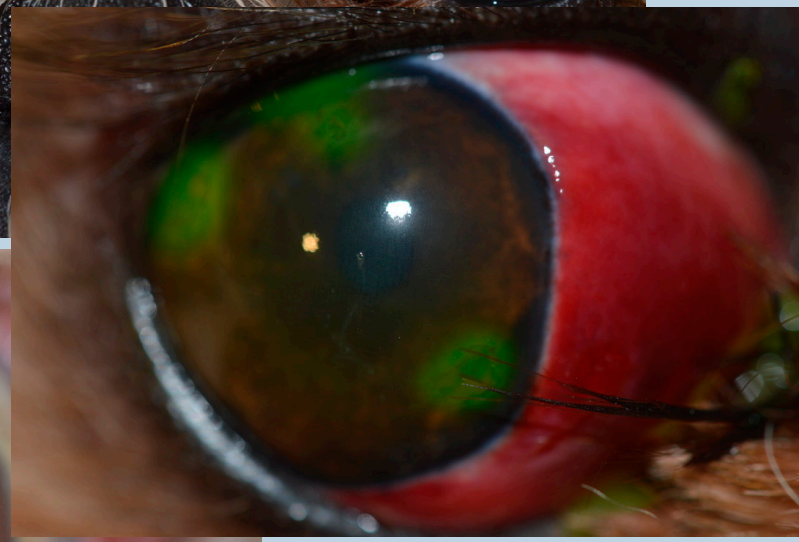
Linda J. Müller [a], Carl F. Marfurt [b], Friedrich Kruse [c], Timo M.T. Tervo [d]

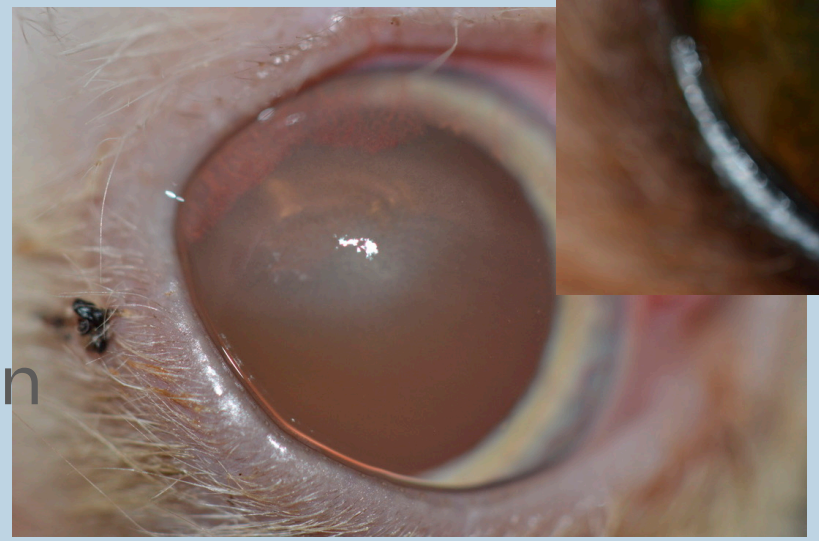


- Denervation post ICLE
- Chronic superficial ulcers
- Long healing times
- NO LITERATURE AVAILABLE

Post-proptosis

- Rostral displacement of the globe:
  - Inhability to close the eyelids
- Ulcer not necessarily axially due to lateralisation globe
  - Lateral rectus 1st to break
- Immediate ulceration due to exposure
- Long term: due to denervation





Facial palsy: cats less corneal issues than dogs?

Facial palsy due to brain stem lesion

Facial palsy

- French bull dog 27%
- Mixed dogs 13.5%
- Mean age 7.6y
- Causes
  - Otitis media/interna 11.9%
  - Iatrogenic 11.9%
  - MUO 8.3%
  - Idiopathic despite workup 13.1%

Ocular findings in dogs with facial paralysis: A retrospective study from 2009 to 2023

Laura Gaztelu[1,2]; Marta Leiva[1,2]; Francisco Cantero[1]; Teresa Peña[1,2]

[1]Servei d'Oftalmologia, Hospital Clínic Veterinari, Universitat Autònoma de Barcelona, Bellaterra, Spain; [2]Departament de Medicina i Cirurgia Animals, Facultat de Veterinària, Universitat Autònoma de Barcelona, Bellaterra, Spain

Purpose: To describe the signalment, prevalence and outcome of ocular abnormalities associated with facial paralysis in dogs.

Methods: Medical records of dogs affected with facial paralysis, assessed by the Ophthalmology Service at the Veterinary Teaching Hospital of the Autonomous University of Barcelona, were reviewed from 2009 to 2023.

Results: Seventy-four dogs (84 eyes) met the inclusion criteria. Twenty patients were French Bulldog (27%) and 10 were mixed-breed dogs (13.5%), with a mean age of 7.6 years. Bilateral affection was detected in 10 dogs (13%). The most common causes were otitis media/interna (10 eyes; 11.9%), iatrogenic (10 eyes; 11.9%) and meningoencephalitis of unknown origin (7 eyes; 8.3%). Despite the complete diagnostic protocol, etiology was not determined in 11 dogs (13.1%). Corneal ulcers (52 eyes; 61.9%) and reduced Schirmer Tear Test values (24 eyes; 28.6%) were the most frequent ocular findings on admission, being corneal ulcers mostly superficial (44 eyes; 84.6%). Eleven of the eyes with low STT were accompanied by xeromycteria (45.8%). From those dogs with follow-up >7 days -mean of 261 days- (60 dogs, 66 eyes), recovery from paralysis was complete in 14 eyes (21.2%) and partial in 16 (24.2%). Mean time to recovery was 107 days. Thirty-one eyes did not recover (47%) and 13 eyes (15.5%) were enucleated.

Conclusion: Ocular surface disease is likely to occur in patients with facial paralysis. Potential vision-threatening conditions such as ulcerative keratitis and neurogenic keratoconjunctivitis sicca are the most common ocular complications. Almost half of the patients did not recover eyelid motor function during the follow-up period.

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Facial palsy

- Corneal ulcers 61.9%
- Reduced STT 28.3%
  - Xeromycteria 45.8%
- Recovery mean 261 days
  - Complete 21.2%
  - Incomplete 24.2%
- No recovery 47%
  - Enucleation 15.5%

Ocular findings in dogs with facial paralysis: A retrospective study from 2009 to 2023

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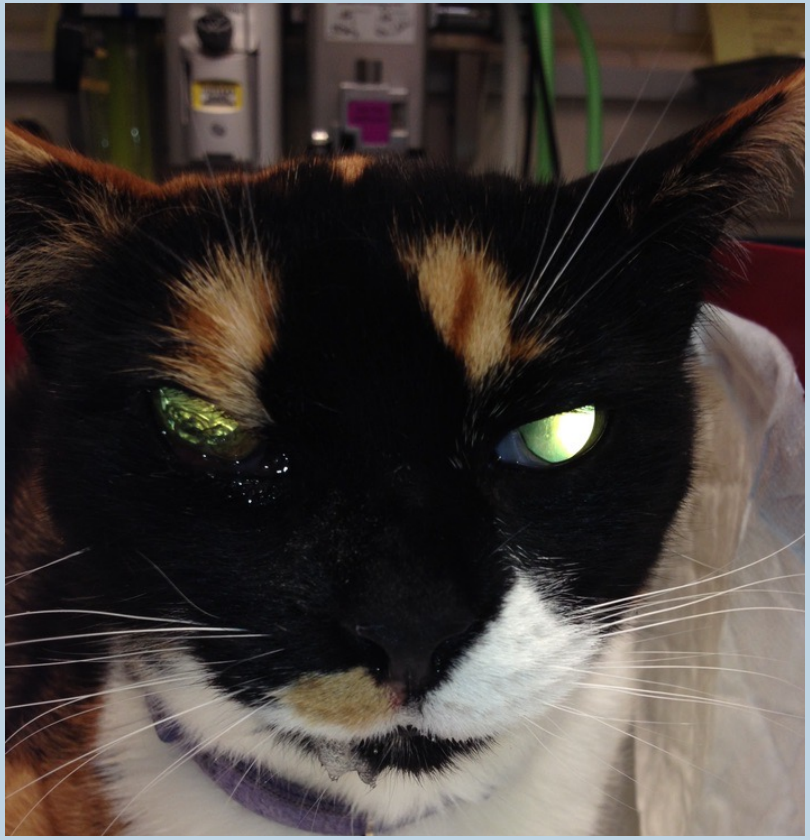
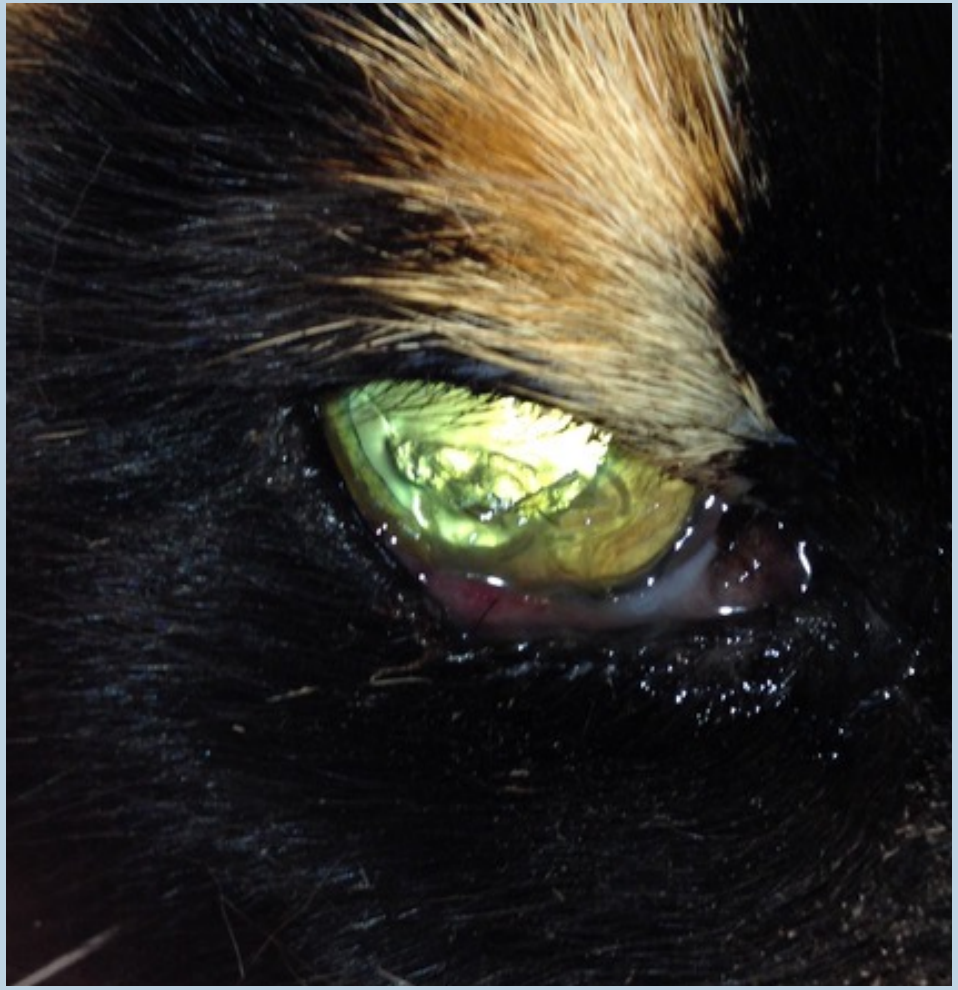
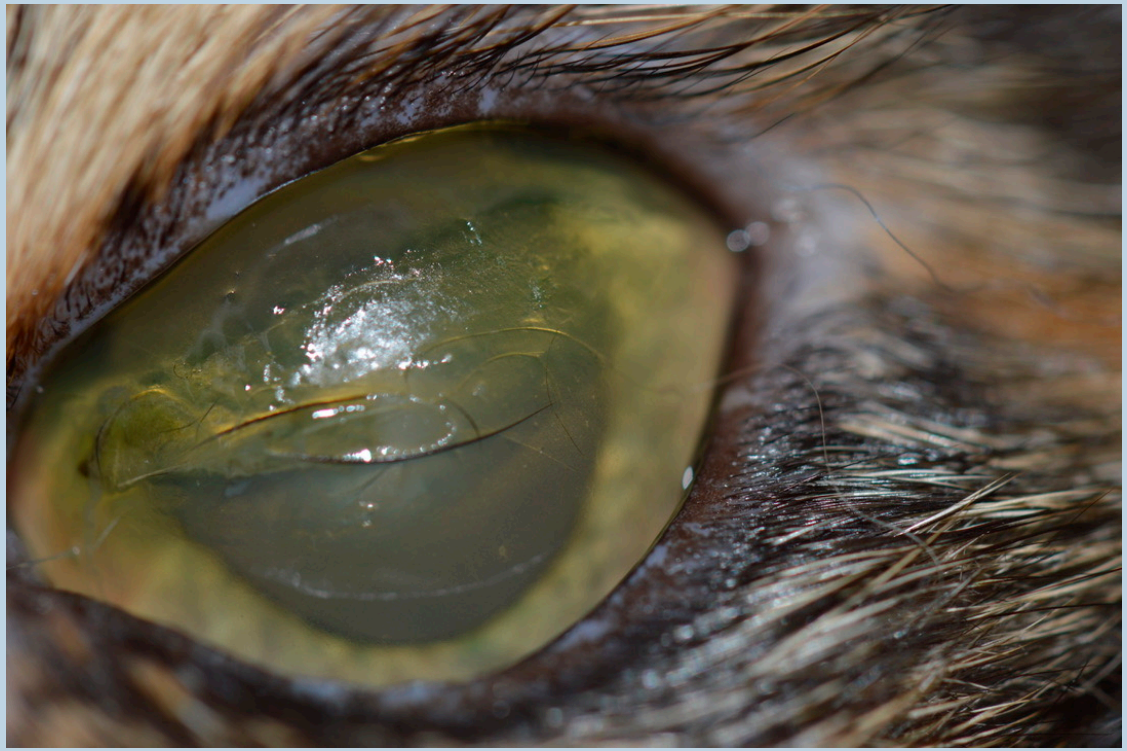
Feline middle cranial fossa



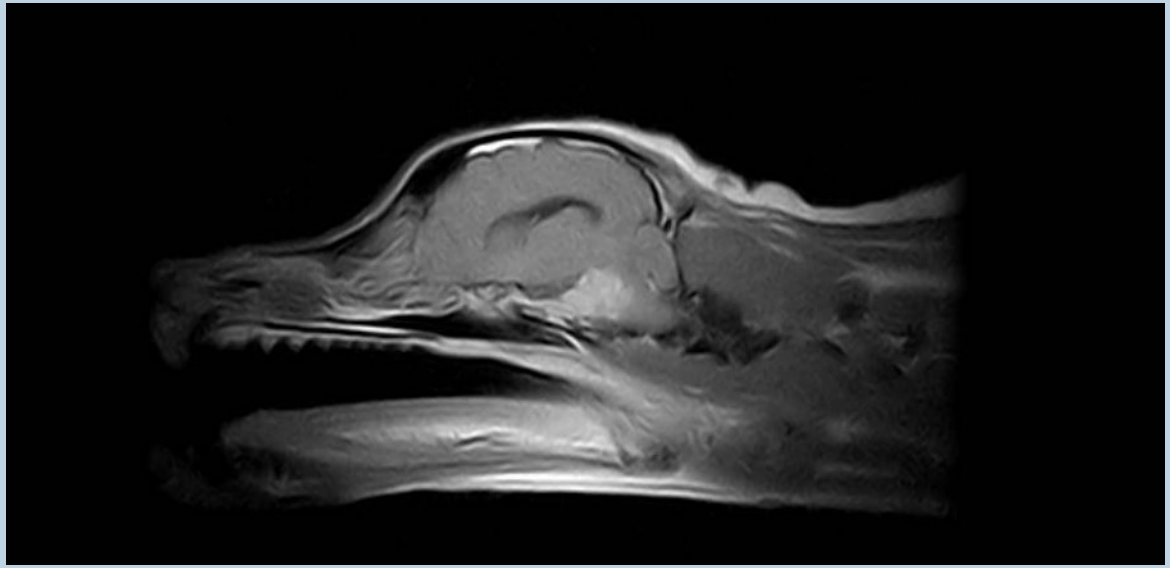


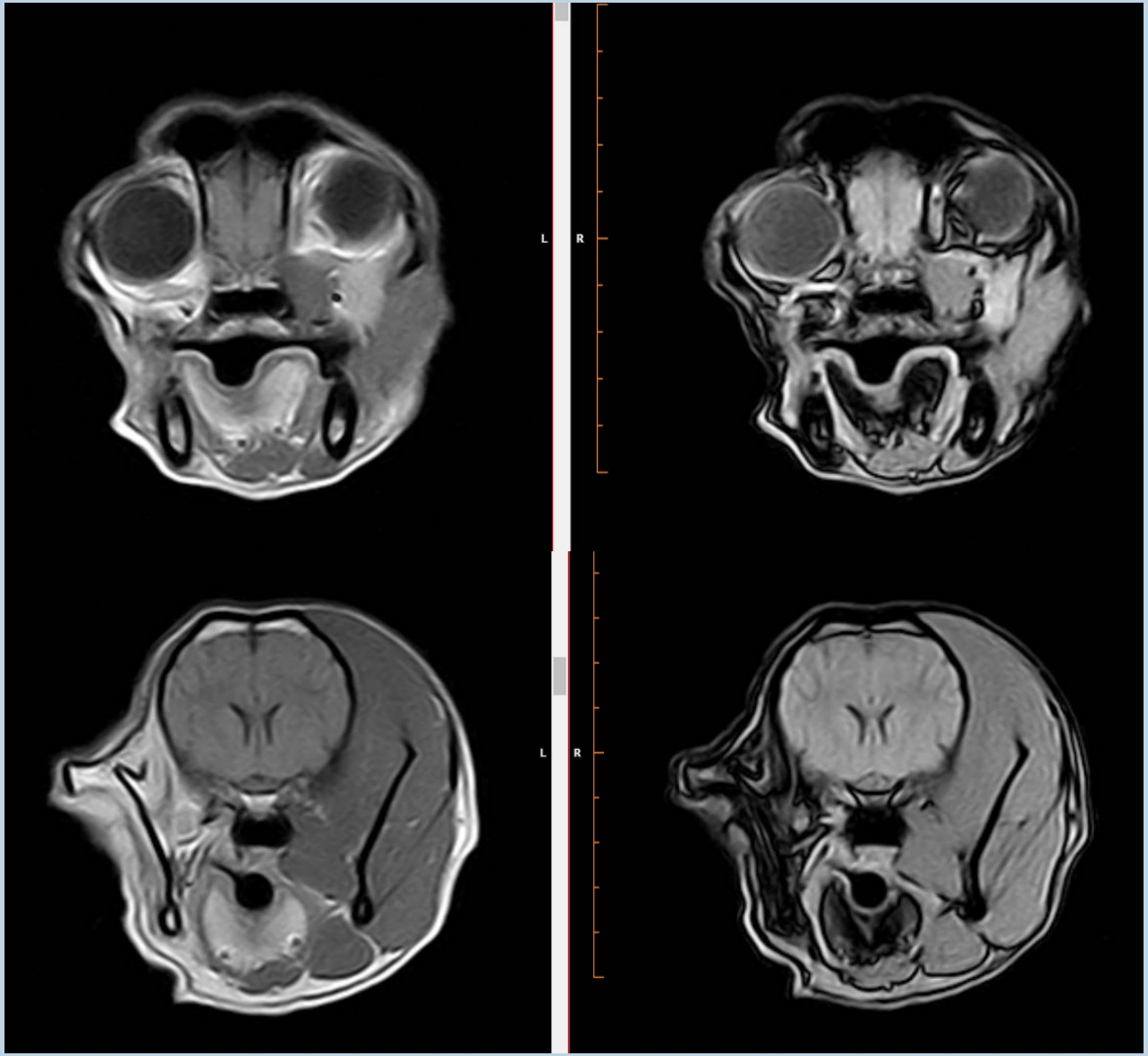
Fel ophthalmoplejia interna externa, neurogenic dry eye, neurotrophic and neuroparalitic keratitis



X-breed, 10y, FE

Masticatory muscle atrophy secondary to intracranial disease





What is a non-healing ulcer?

- Definition
  - A corneal ulcer that does not heal within 7-10 days
- Ophthalmic causes
- Non-ophthalmic causes