



# OCT is a valuable diagnostic tool for confirming Descemet's membrane detachment in guinea pigs

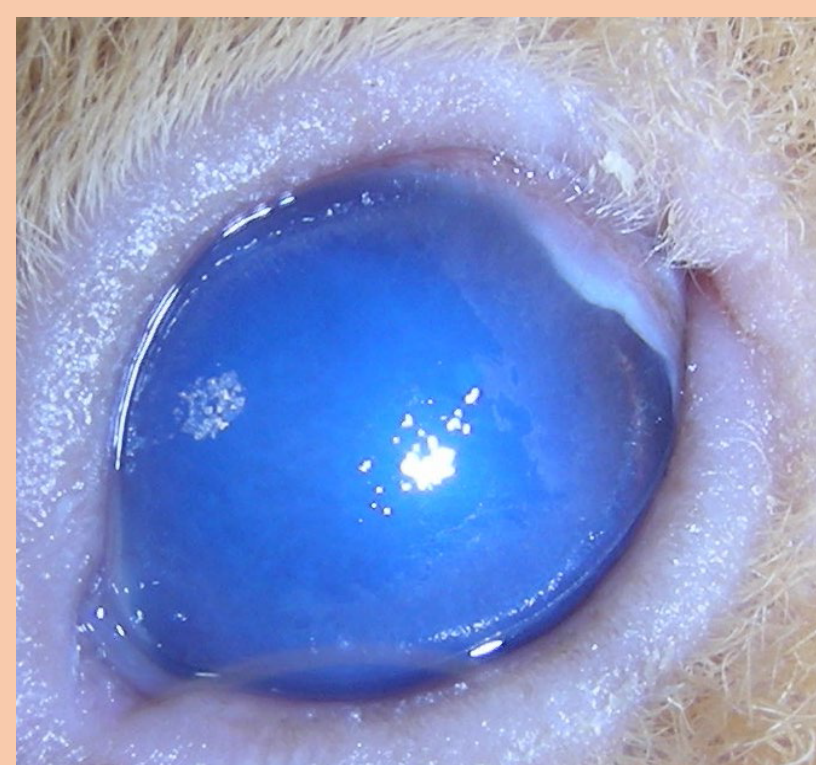
## Descemet's membrane detachment in two guinea pigs and follow-up

### Initial clinical presentation



Guinea pig 1, female, 4 years, cloudy left eye for 4 weeks

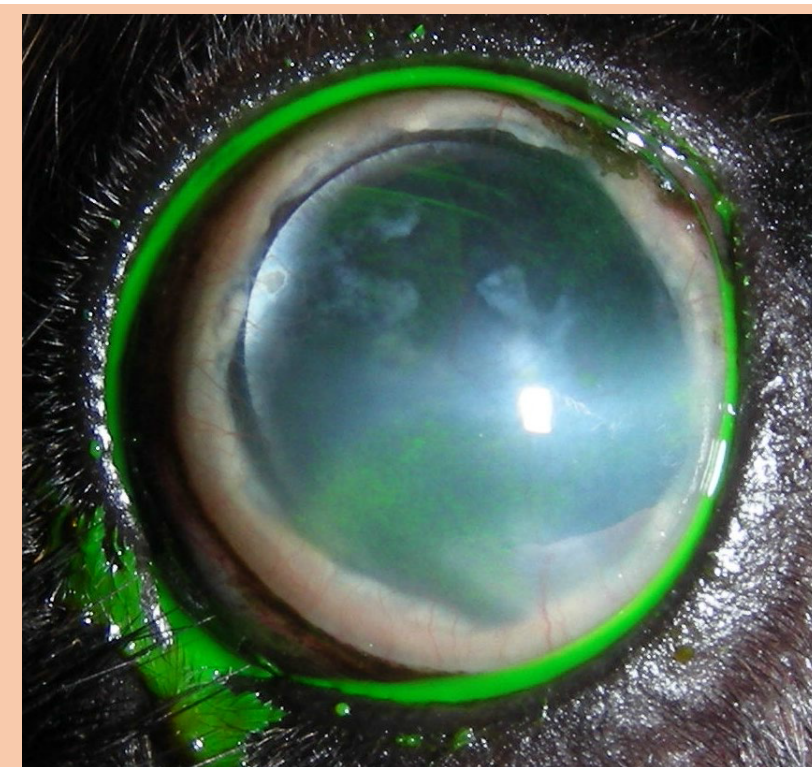
- heterotopic bone formation 360°
- known secondary glaucoma
- moderate diffuse corneal edema
- uveitis
- suspected rupture of Descemet's membrane
- IOP 17 mmHg (TonoVet, iCare, Vantaa, Finland)



Guinea pig 2, castrated male, 5 years, cloudy left eye for several days

- heterotopic bone formation 360°
- questionable buphthalmos
- severe diffuse corneal edema
- suspected folding of Descemet's membrane
- IOP 9 mmHg (TonoVet Pro, iCare, Vantaa, Finland)

### Therapy



3 months after the beginning of therapy.

Guinea pig 1

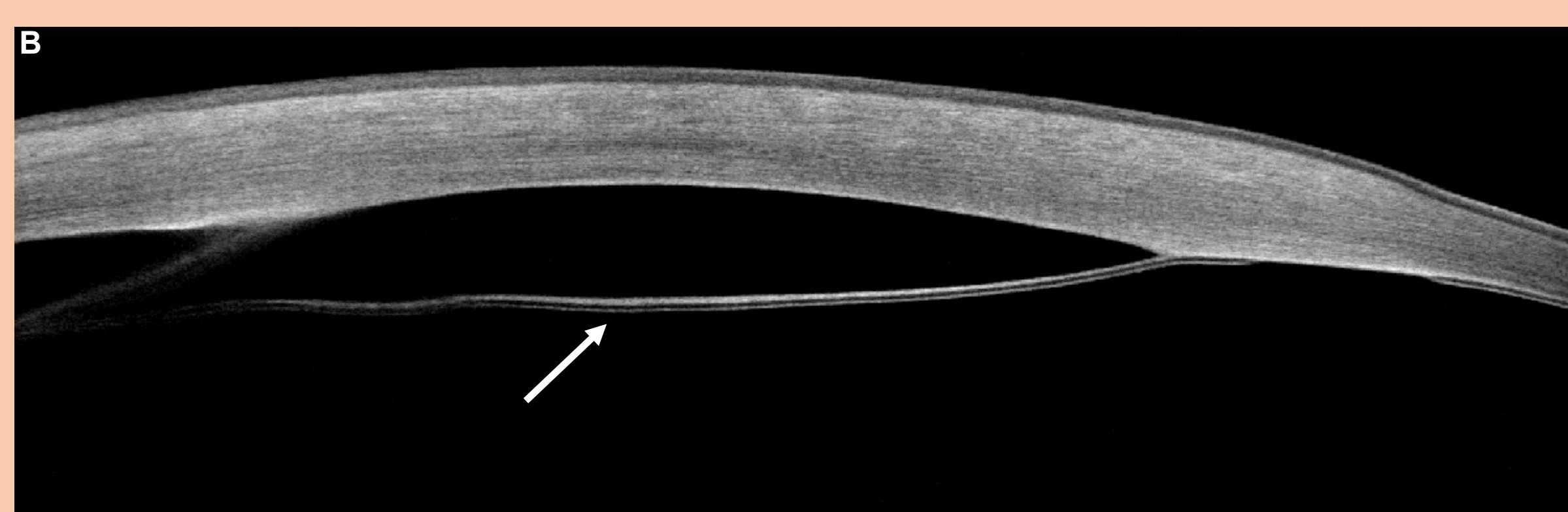
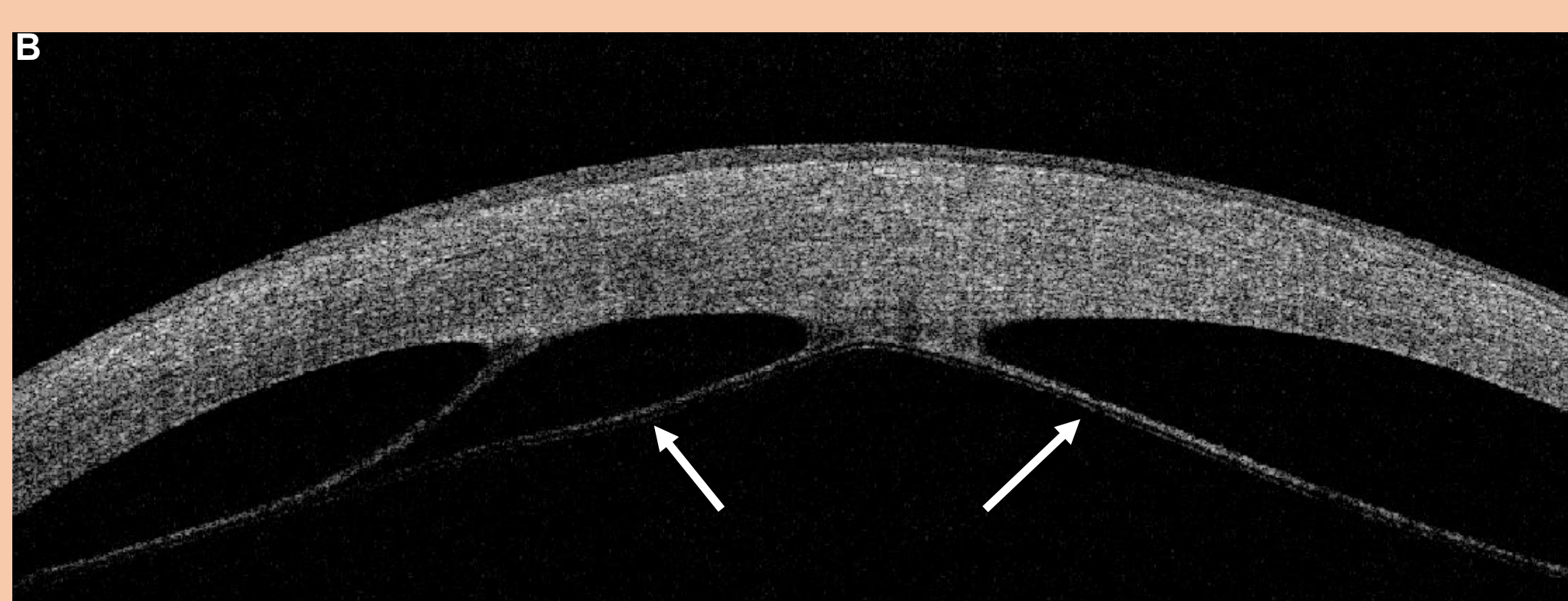
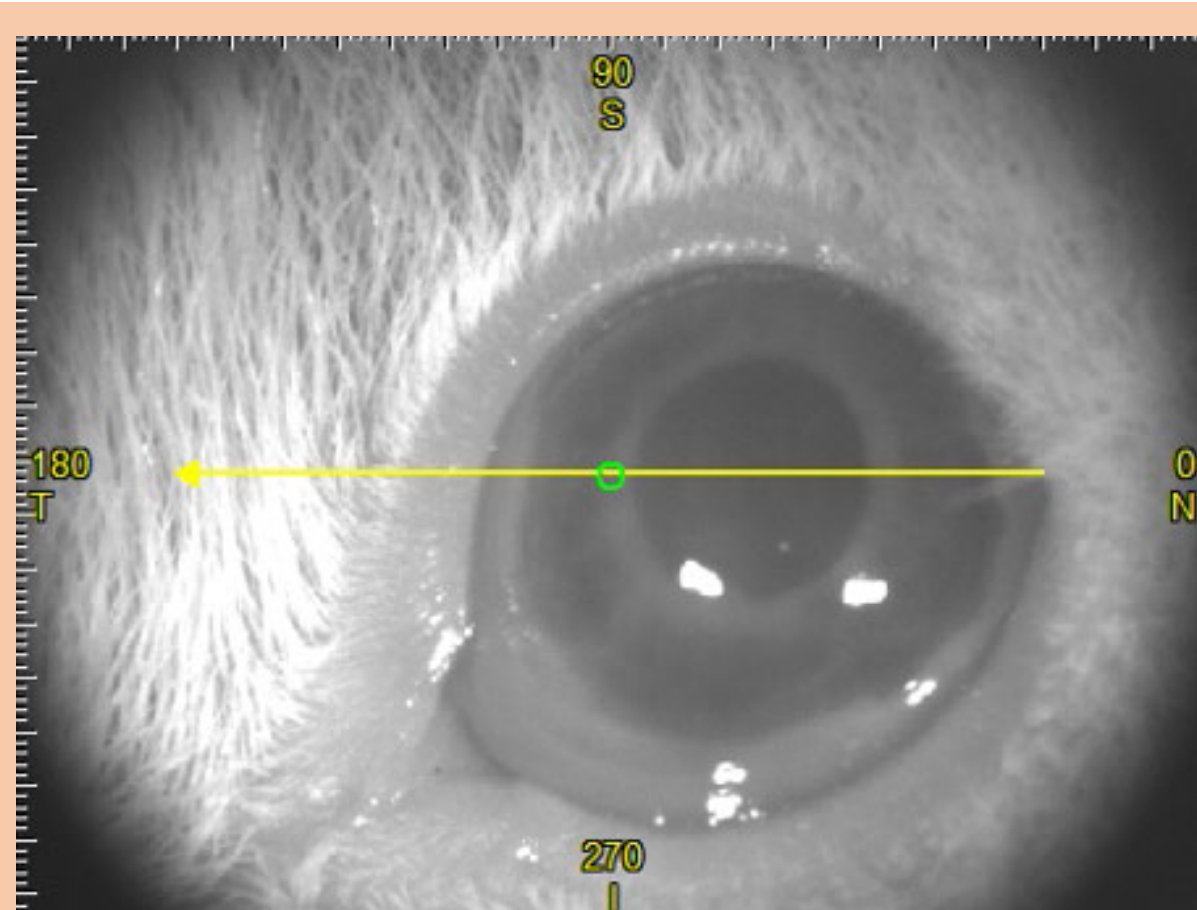
- Prednisolone acetate eye drops every other day
- Brinzolamide eye drops 1x per day



14 days after starting therapy, showing significantly reduced corneal edema.

Guinea pig 2

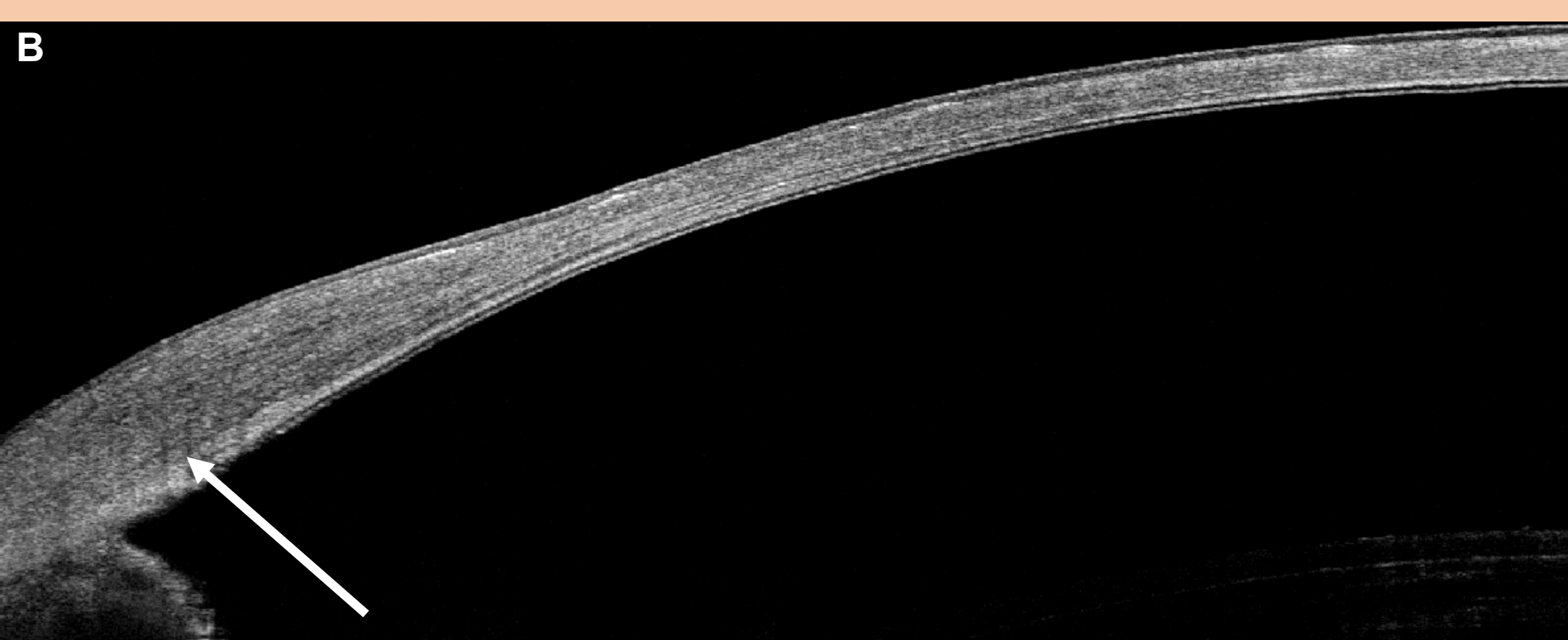
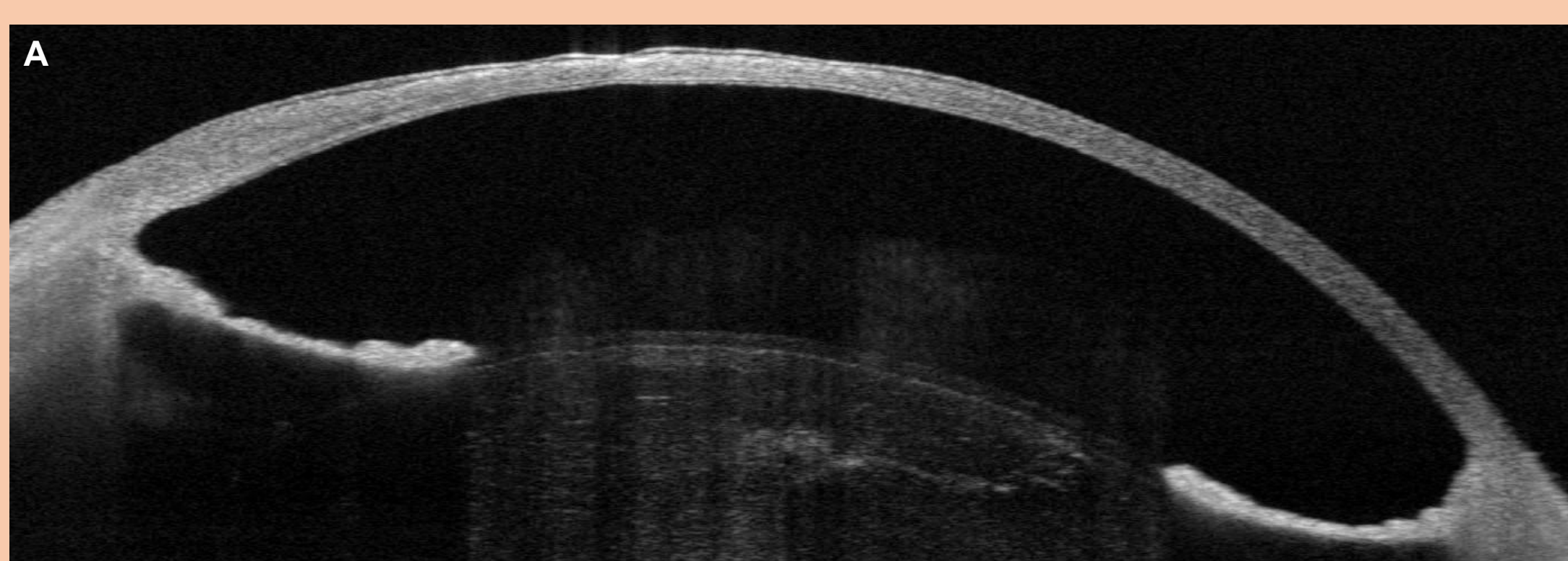
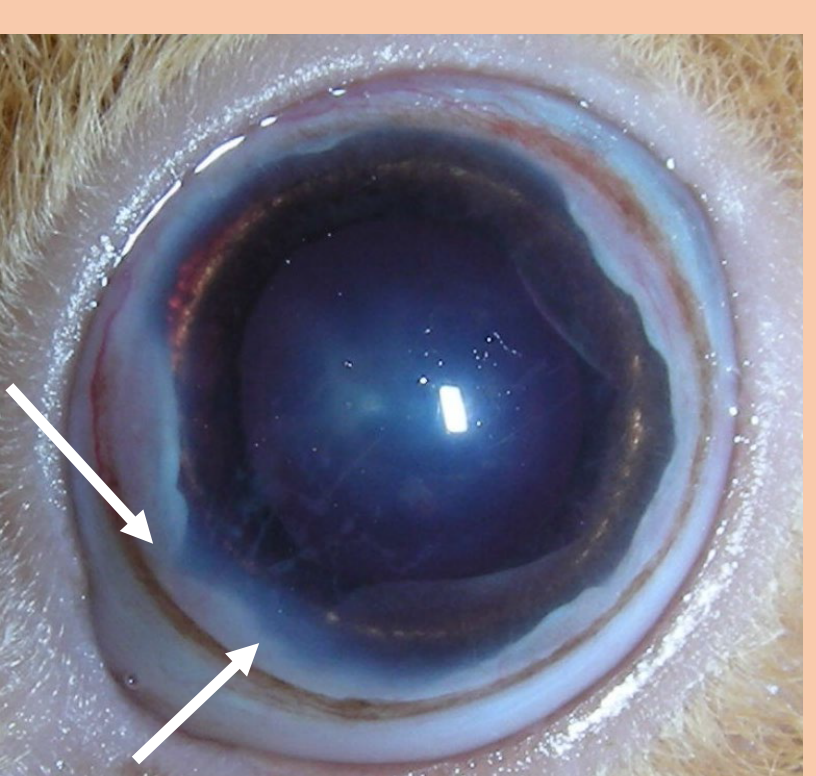
- NaCl 10% eye ointment 2-3x per day
- Brinzolamide eye drops 1x per day
- NSAID orally



**Figure 1.** Anterior segment OCT images of guinea pig corneas showing Descemet's membrane detachment. White arrows indicate the detached Descemet's membrane. Images labeled **A** were acquired using the **Tomey Casia 2** system, whereas images labeled **B** were acquired using the **Optovue iVue 100** system.

**Upper row:** Guinea pig 2  
**Lower row:** Guinea pig 1

### Follow-up Guinea pig 2



**Figure 2.** Follow-up examination after 16 weeks of therapy, including hypertonic saline eye drops and ointment. Corneal edema was markedly reduced, with persistent edema limited to the perilimbal region (white arrows). Anterior segment OCT images show a significant reduction in corneal edema and resolution of Descemet's membrane detachment, with persistent limbal edema (white arrow).

### Guinea pigs - tiny horses?

Descemet's membrane detachment remains rarely described in veterinary literature, with a clinical incidence in horses estimated at approximately 1.04% (1). Historically, DMD in equine patients has been strongly associated with intraocular surgery (e.g., phacoemulsification) or chronic conditions such as equine glaucoma and recurrent uveitis (1-4). In these cases, it is hypothesized that mechanical stretching of the globe (buphthalmos) may exceed the elastic limits of the membrane, leading to its detachment (1). Interestingly, new evidence has expanded this clinical picture to other species: a recent report describes the first diagnosis and follow-up of DMD in a 4.5-year-old guinea pig (5). Mirroring equine cases, the guinea pig presented with diffuse corneal edema and was diagnosed using high-resolution ultrasound and optical coherence tomography (5). The presence of concurrent heterotopic bone formation in the guinea pig case further highlights the complex clinical presentation of this condition (5).



**Figure 3.** 27-year-old Haflinger mare with glaucoma-associated Descemet's membrane rupture and separation

**Left:** Initial clinical presentation demonstrating severe corneal edema.

**Right:** Postoperative appearance following surgical stabilization with a partial Gundersen flap and medical management, including 5% NaCl 10% and dorzolamide/timolol



Literature/sources: 1. Slenter IJM, Hermans H, Ensink JM, Willems DS, Verza S, Grinwis GCM, et al. Clinical, ultrasonographic, and histopathologic findings in seven horses with Descemet's membrane detachment: A case series. *Vet Ophthalmol.* 2020;23(1):161-9.  
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3. Henriksen MdL, La Croix N, Wilkie DA, Lassaline-Utter M, Brantman KR, Beamer GL, et al. Glaucoma with Descemet's membrane detachment in five horses. *Veterinary Ophthalmology.* 2017;20(3):273-9.  
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5. C C, K V. Abstracts: Annual Scientific Meeting of the European College of Veterinary Ophthalmologists, Florence, Italy May 10-13, 2018. *Veterinary Ophthalmology.* 2018;21(5):E1-E35.



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