



# Canine Glaucoma

Dr Tamir Spiegel

D.E Ophthalmologie ENVA

BVMS MRCVS

Vision Vet

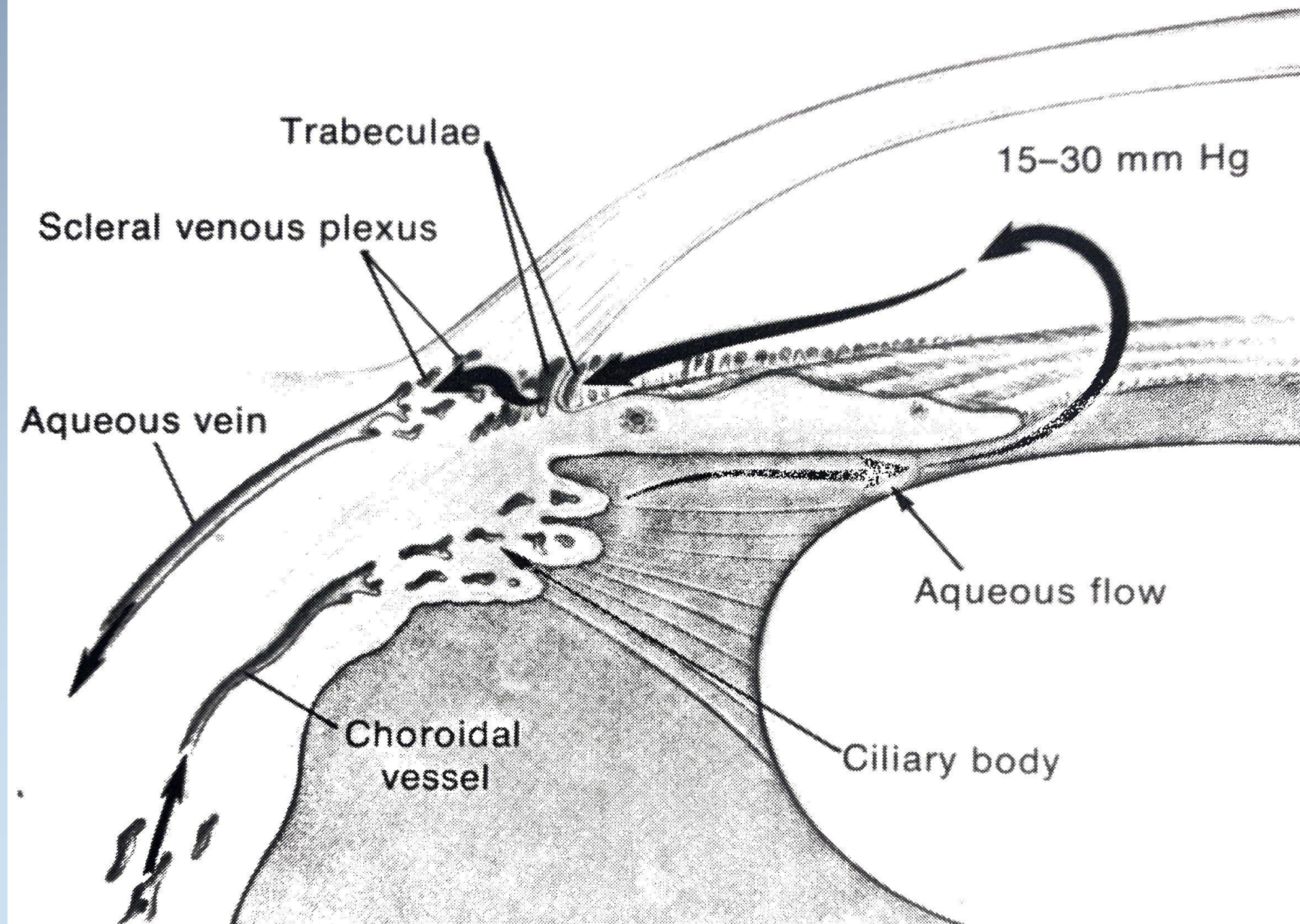
[www.vision-vet.co.uk](http://www.vision-vet.co.uk)

# Normal IOP

- Dog 15-25 mmHg.
- Cat 16-27 mmHg
- Rabbit 16-20 mmHg

# Definition

- High IOP ( $> 25-30$  mmHg) that causes degenerative changes in the optic nerve and retina with loss of vision.



Slatter; Fundamentals of Veterinary Ophthalmology; Glaucoma; Pathway of normal aqueous production and drainage

# Pathophysiology

- Develops when the normal outflow of aqueous is impaired.

# Clinical signs

- **Acute glaucoma:**
- Pain
- Increased lacrimation
- Blepharospasm
- Corneal oedema
- Episcleral congestion
- Dilated pupil
- Blindness

# Clinical signs

- **Chronic glaucoma:**
- Enlarge globe
- Superficial and deep corneal vascularization
- Optic disc cupping
- Corneal ulceration
- Corneal (Haab's) striae - grey lines on cornea from tears Descemet's membrane
- Lens subluxation/luxation
- Retinal atrophy

# Classification of glaucoma

- Open-angle glaucoma: normal, wide angle on gonioscopy
- Closed-angle glaucoma: angle is collapsed or covered with peripheral iris or connective tissue



# Classification of Glaucoma

- **Open-angle glaucoma**
  - Primary: normal angle, bilateral, breed predisposition
  - Secondary: Normal angle obstructed by aqueous contents or elevated episcleral venous pressure interferes with aqueous drainage
- Uveitis
- Neoplasia
- Hyphema
- Anterior lens luxation
- Pigment dispersion syndrome
- Lipid in anterior chamber obstruct outflow

# Classification of Glaucoma

- **Closed-angle glaucoma:** angle is collapsed or covered with peripheral iris or connective tissue

## A. Primary:

1. Congenital: Goniodysgenesis - maldeveloped angle covered with mesodermal tissue, usually bilateral
2. Acquired: closure associated with abnormal anterior chamber conformation
  - a. Forward displacement of lens
  - b. Shallow anterior chamber due to peripheral anterior synechiae

# Closed-angle glaucoma

- **B. Secondary:**
  - 1. Associated with pupillary block:**
    - a. Intumescent lens
    - b. Posterior synechiae, iris bombe
    - c. Subluxated lens
    - d. Aphakic vitreous herniation

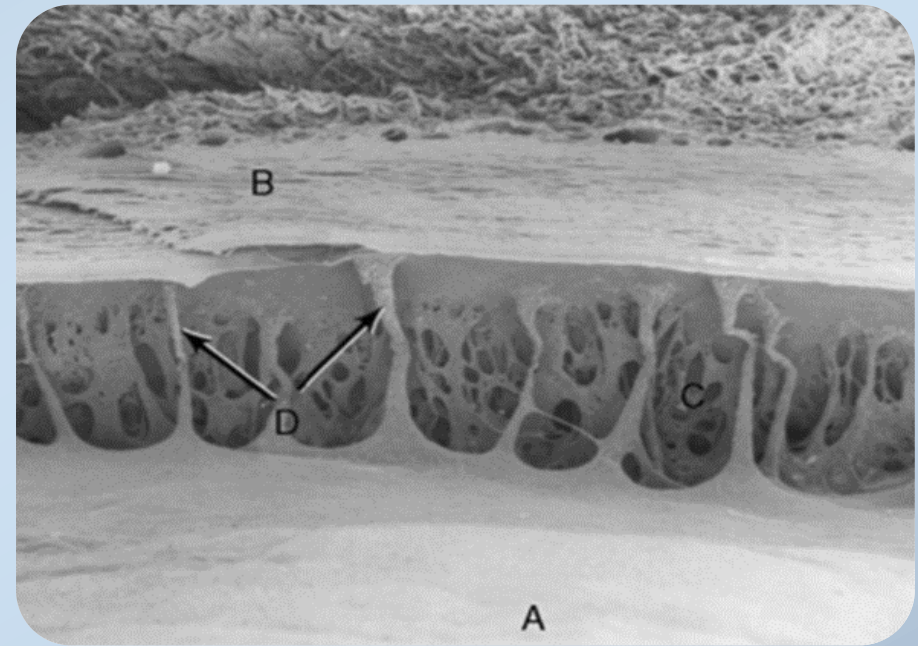
# Closed-angle glaucoma

## 2. **No pupillary block**

- a. Neoplasia with invasion of angle and/or pushing the iris forward or thickening of the iris
- b. Inflammation with peripheral anterior synechiae
- c. Subluxated lens pushing iris base forward

# Which instruments are essential to diagnosed glaucoma

- Pen torch
- Direct ophthalmoscope
- Tonopen:
  - Schiötz, Tonopen or Tonovet.
- Goniolens: (referral)
  - Examination of the iridocorneal angle.



Gonioscopic view of iridocorneal angle: (A) iris, (B) pigmented zone, (D) pectinate ligaments and ciliary cleft containing trabecular meshwork

# Treatment

- Medical, surgical or a combination of both
- Before treatment the **underlying cause needs to be determined since this will influence the choice of treatment**
- **Aim:**
- Lower IOP to a level which is comfortable
- Stop optic nerve or retinal damage
- Prevent deterioration in eyesight if the eye is still visual or there is a potential for a return of some vision

# Treatment: medical

- Emergency treatment should be considered regardless of cause
  - Blood test and physical exam
  - **Manitol** 10 - 20 %: 0.5-2 g/kg solution IV over 20-30 minutes.
- *Contraindicated in patients with severe dehydration, severe pulmonary congestion, pulmonary oedema or intracranial pressure.*
- *Any crystals that have formed during storage should be dissolved.*
  - Pain relief - **opiates or NSAIDs**
  - Paracentesis



# Treatment: medical

- **Topical carbonic anhydrase inhibitors:** such as **brinzolamide** (Azopt, Allergan: 1 drop 2-3 times per day) or **dorzolamide** (trusopt, MSD 1 drop 3 times per day)
- Function: reduce the production of aqueous at the ciliary body

# Treatment: medical

- **Topical prostaglandin analogues: latanoprost** (Xalatan, Pharmacia & Upjohn 1 drop 1-2 times per day) or **Travoprost** (Travatan, Novartis Pharmaceuticals 1 drop 1-2 times per day)
  - Function: by improving the outflow of aqueous
  - Only to be used for primary glaucoma. **NOT to be used for uveitis**
  - Often used in conjunction with topical carbonic anhydrase inhibitors

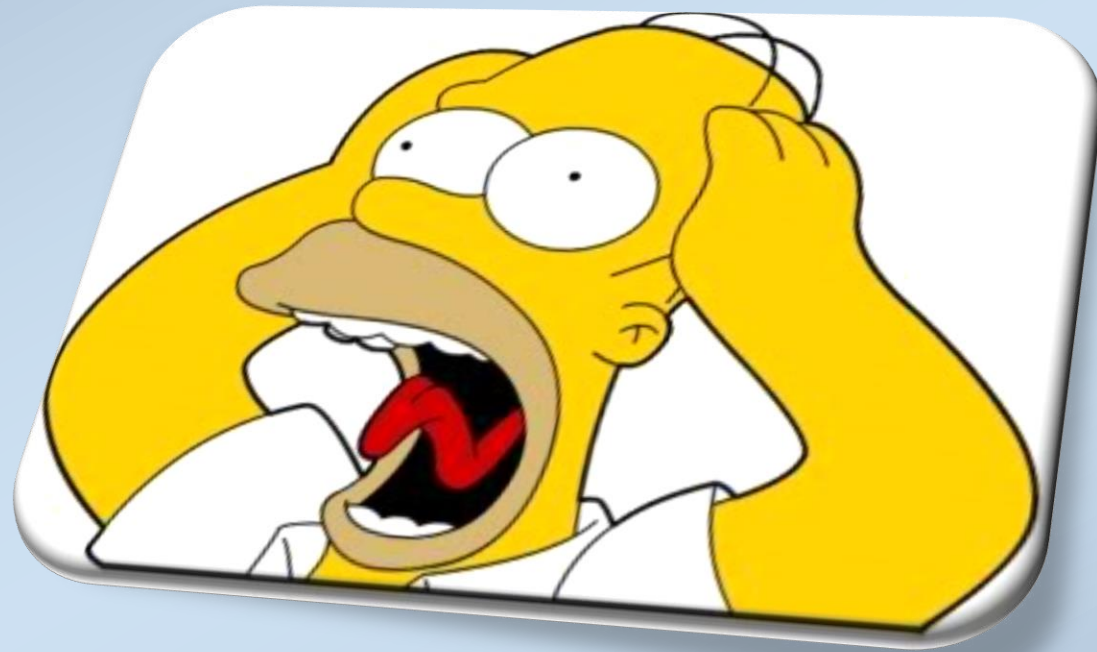
# Treatment: Surgical

- **Procedure to reduce the production of aqueous:**
  - Laser surgery - cyclophotocoagulation
  - Cryosurgery - cyclocryotherapy
- **Procedures to increase outflow:**
  - Drainage implant
  - Scleral trephination
  - Peripheral iridectomy
  - **If eye is blind and painful, enucleation is recommended**

# Case Discussion

- English Cocker Spaniel
- 7 years old
- Painful left eye lasts for 2 days
- What can you see?
- Which instruments would you use to examine this case?
- What is your assumption diagnosis?
- How would you treat the case?
- What would you do for the other eye?





# 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 remotely.
- 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

- Slatter's Fundamentals of Veterinary Ophthalmology; 3<sup>rd</sup> edition; Glaucoma; 350-380
- Essentials of Veterinary Ophthalmology; Kirk N. Gelatt; Glaucoma; 155-187
- Small animal ophthalmic surgery; Kirk N. Gelatt & Janice Gelatt; Surgical procedures for treatment of the glaucomas; 244- 283
- Small animal Ophthalmology; Sally M. Turner; Saunders; 259-274

