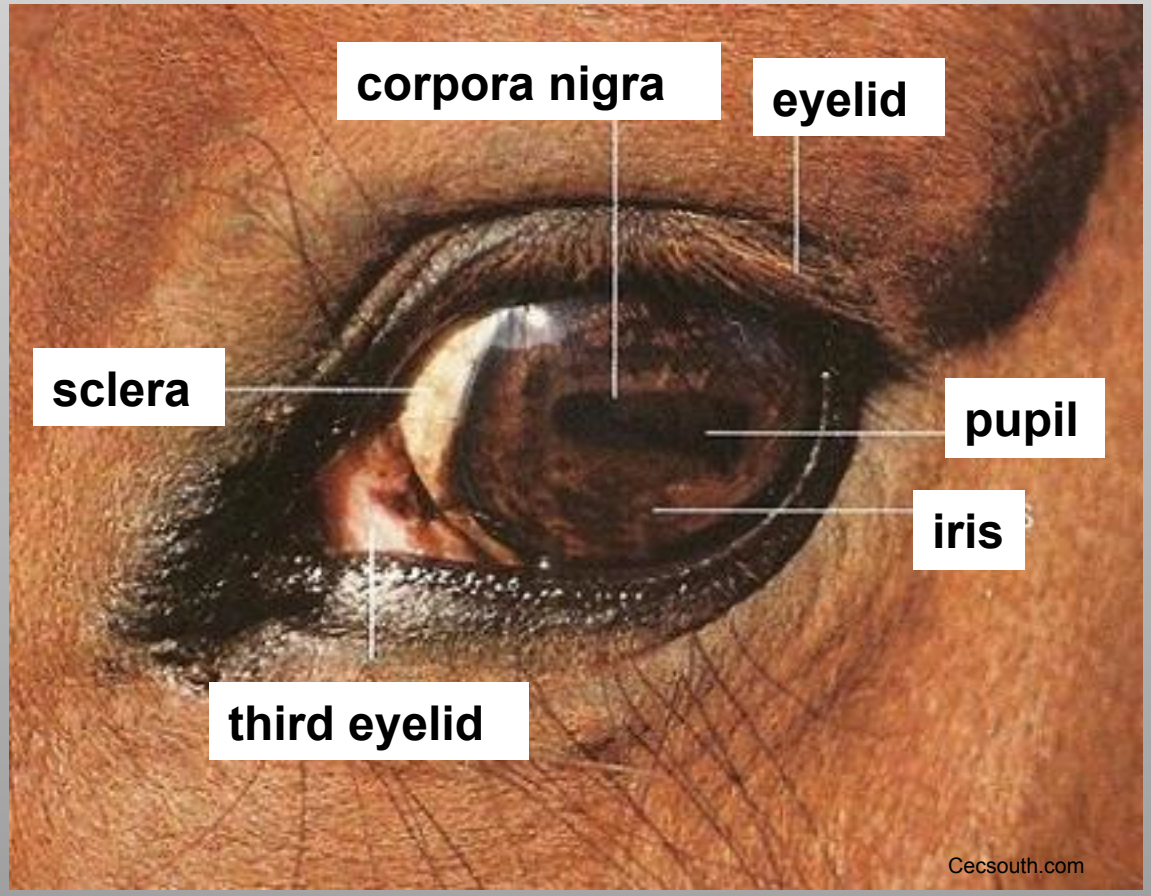
Common Conditions of the Equine Eye

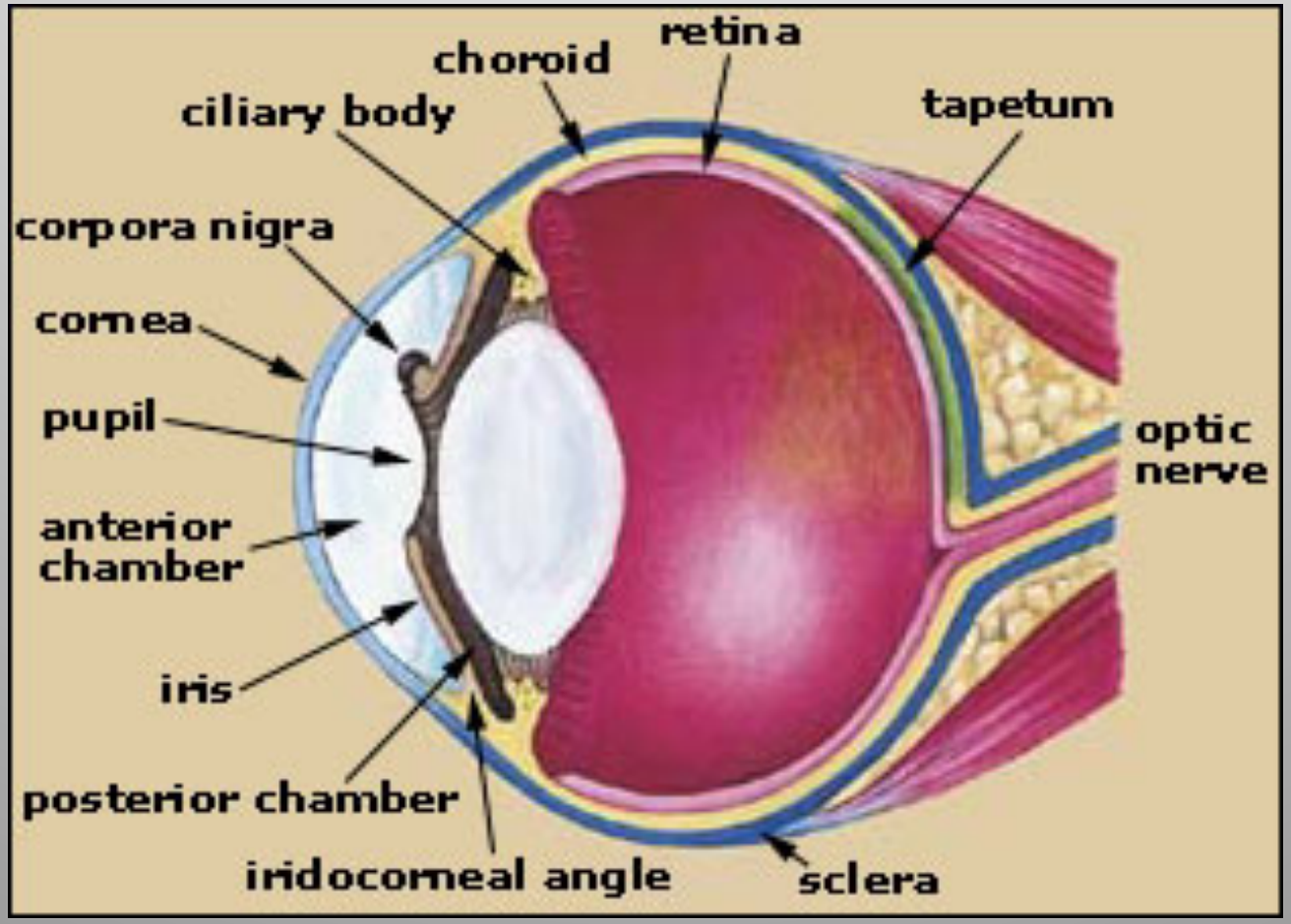
Outline

- Anatomy of the eye
- The ophthalmic exam
- Ocular trauma
- Uveitis
- Neoplasia
- Cataracts
- Glaucoma
- Common procedures
- Management of blind horses

Anatomy of the Eye



Anatomy of the Eye



thehorse.com

Uvea = iris + ciliary body + choroid

Vision

- Wide field of view with lower acuity above and below

Gilger, 2011

Vision

- Horses see color differently
  - Orange and light blue usually appear similar to each other and to gray
  - Red and green often appear similar to gray
  - Blue and yellow can usually be differentiated from gray

Gilger, 2011

The Ophthalmic Exam

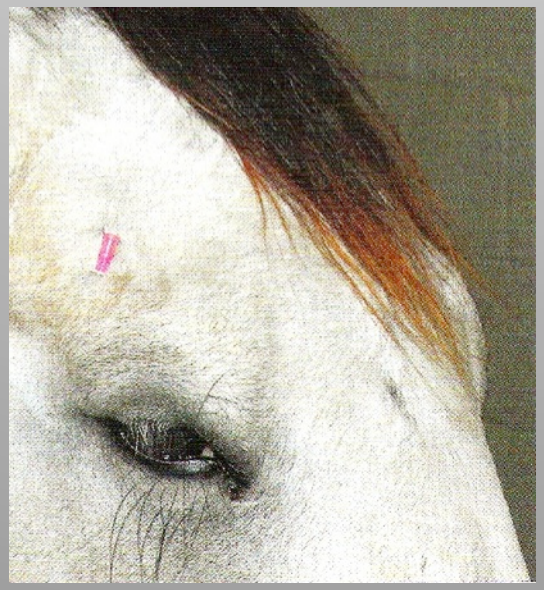
- Distant exam
- Evaluation for symmetry
- Vision assessment
  - Menace response
  - Dazzle response
  - Obstacle course
- Pupillary light reflexes
- Sedation
- Nerve blocks
- Detailed exam of the front of the eye (eyelids, cornea, anterior chamber, iris)

http://cal.vet.upenn.edu

Exam

Regional Nerve Blocks

- Auriculopalpebral nerve block
  - Results in paralysis of the upper eyelid and variable paralysis of the lower eyelid
  - Facilitates opening the eyelid



Gilger, 2011

Exam

Regional Nerve Blocks

Lacrimal

Supraorbital

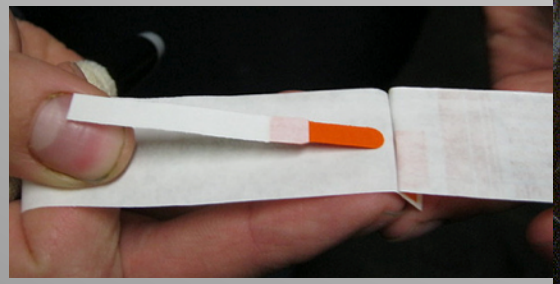
Zygomatic

Infratrochlear

Gilger, 2011

The Ophthalmic Exam

- Fluorescein stain
- Dilate the pupil
- Detailed exam of the back of the eye (lens, retina, optic nerve)



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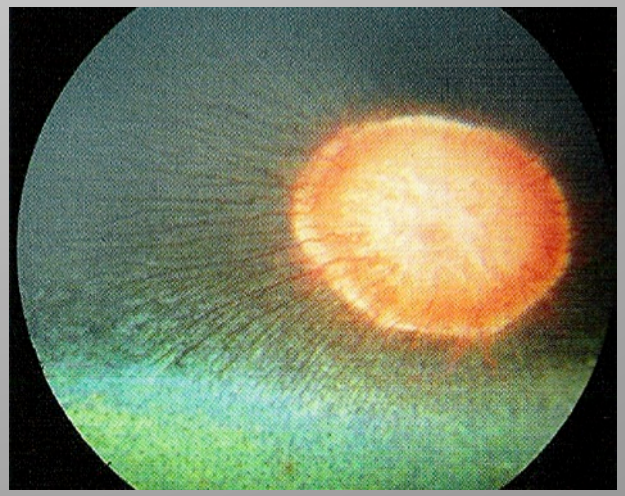
Sciencedirect.com



Gilger, 2011

Exam

Ultrasound

- Useful to evaluate:
  - Masses within the eye
  - Solid versus cystic structures
  - Foreign bodies
  - Retinal detachment

Gilger, 2011

Exam

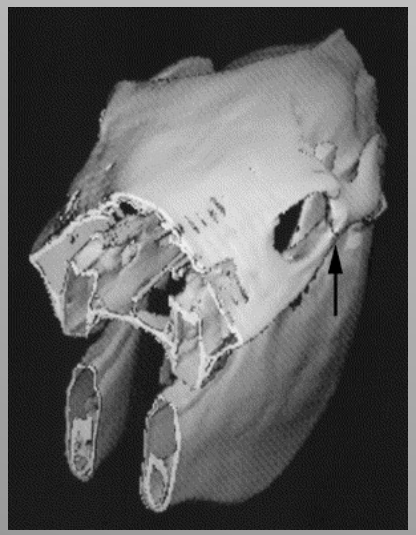
Radiology

- Useful to evaluate:
  - Orbital or facial fractures (displacement, size, and suitability for repair)
  - Forward displacement of the eye
  - Nasolacrimal duct disease

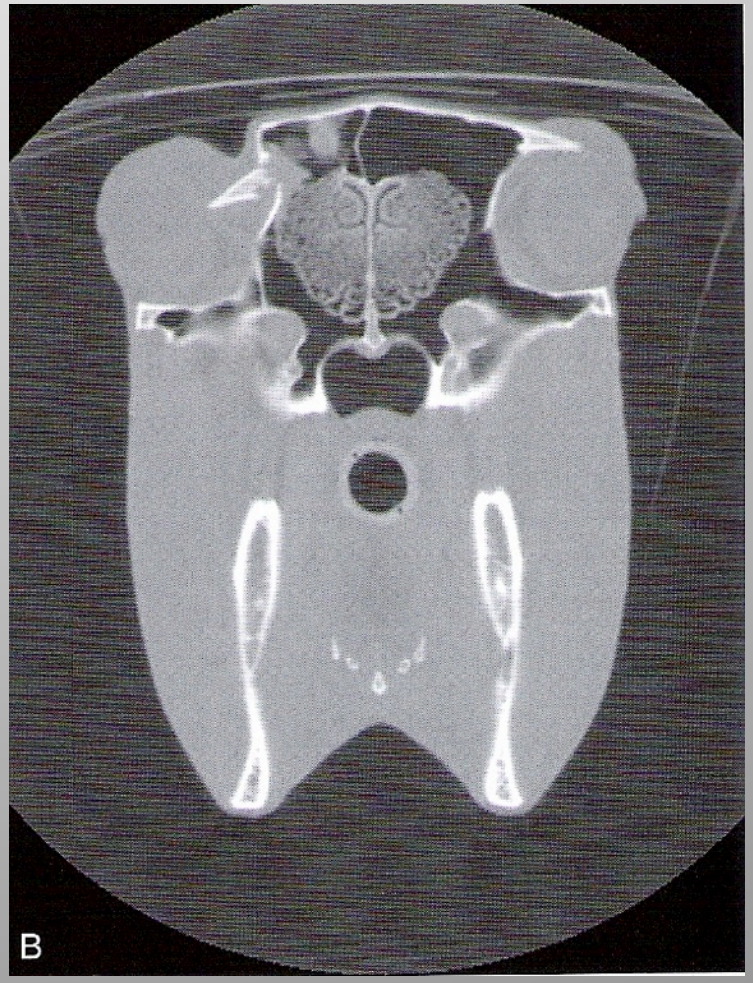
www.acvs.org

CT scan

- Useful to evaluate:
  - periorbital sinuses
  - orbital masses
  - skull fractures



Ramirez, 2004

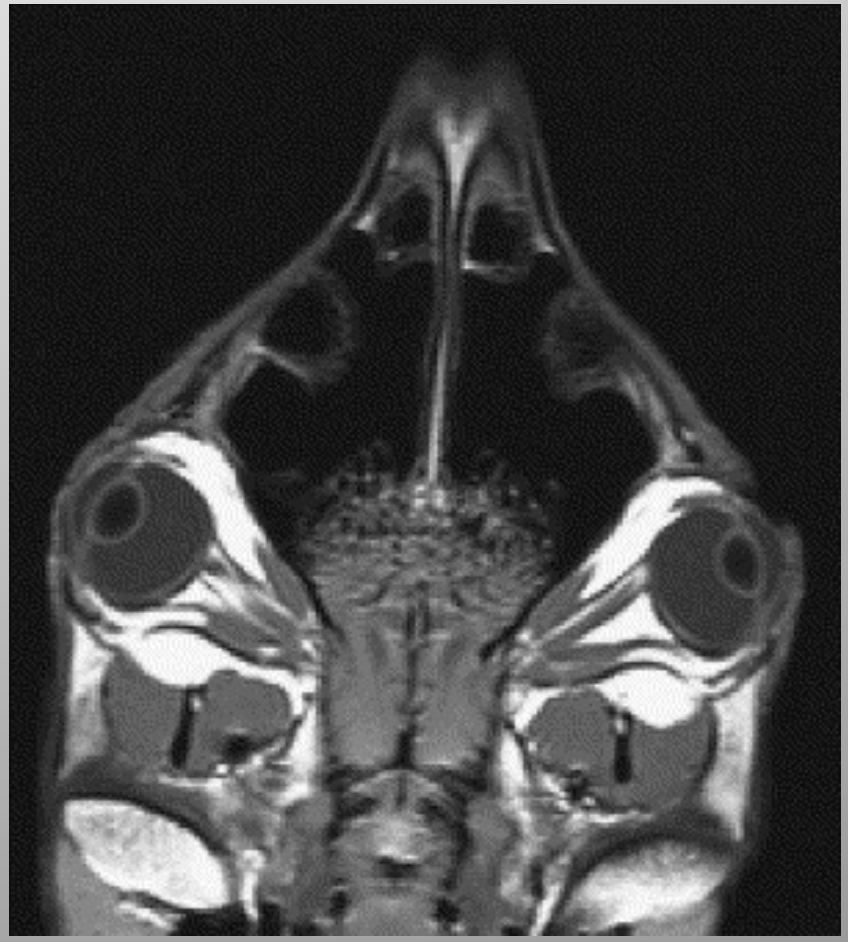


Gilger, 2011

Exam

MRI

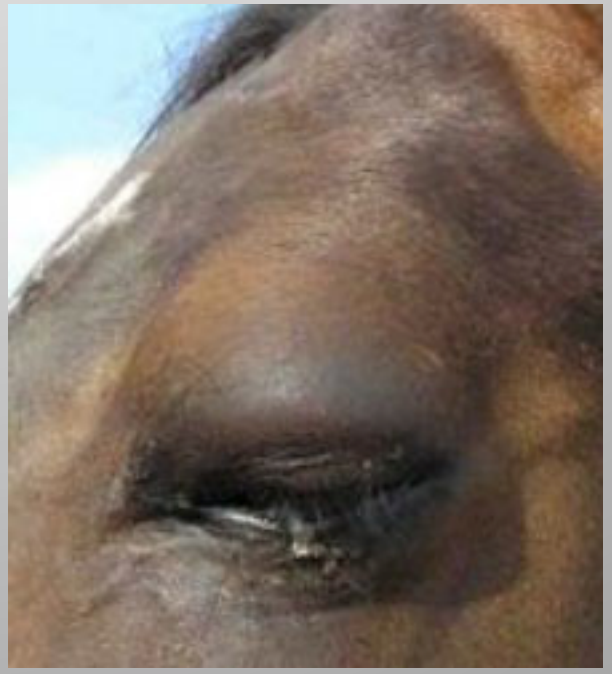
- Important advantage is ability to acquire images in various planes without repositioning the patient
- Superior soft tissue images



Ramirez, 2004

Ocular Trauma

- Call your vet for a same day evaluation if your horse is:
  - Holding the eye shut
  - Squinting, with drainage coming from the eye
  - Eyelid snag or tear
  - Any trauma to the eye



oceanstateequine.com

Superficial Corneal Ulcers

- Clinical signs: squinting, tears, redness
- Diagnosis: fluorescein stain uptake
- Treatment:
  - Topical antibiotics
  - Atropine to treat the inflammation and dilate the pupil
  - Systemic NSAIDs (Banamine) for inflammation and pain

Gilger, 2011

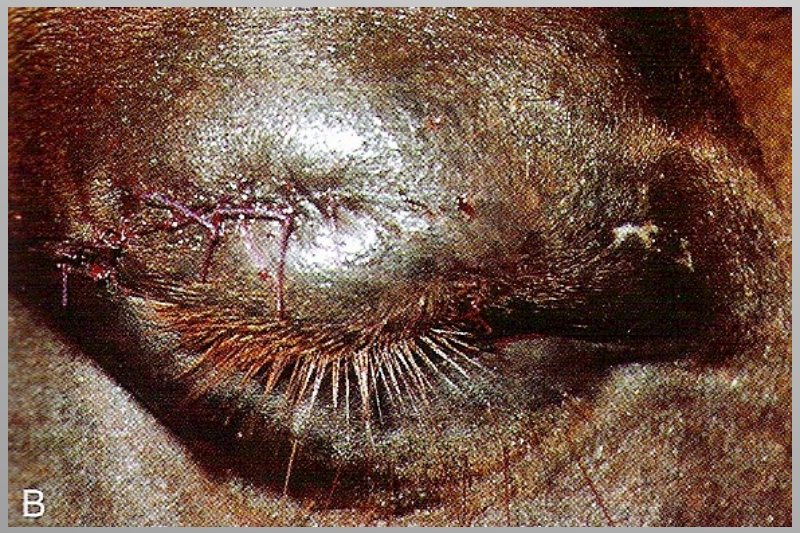
Eyelid Lacerations

- Surgical repair is almost always attempted
- Failure to repair results in keratitis
- Generally a good prognosis due to excellent blood supply

Gilger, 2011

Eyelid Lacerations

- Two layer closure preferred so the inside does not gape and induce irritating scar formation



Gilger, 2011

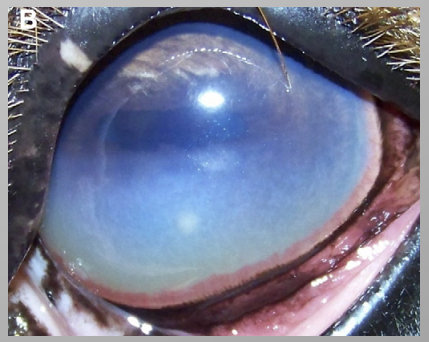
Trauma

Eyelid Lacerations

Brooks, 2009

Anterior Uveitis

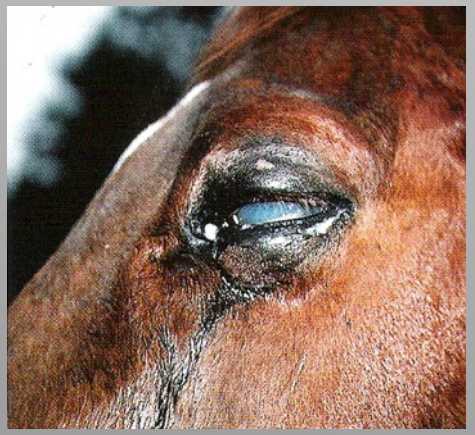
- Inflammation of the uvea
- Clinical signs: sensitivity to light, pain or squinting, cloudiness of the eye, small pupil, redness of the eye
- Causes:
  - Ocular: corneal ulcer, cataracts, neoplasia
  - Systemic: septicemia, viremia, toxemia
  - Immune-mediated: equine recurrent uveitis (ERU)
- Treatment:
  - Treatment of the underlying cause if identified
  - Topical and systemic anti-inflammatories

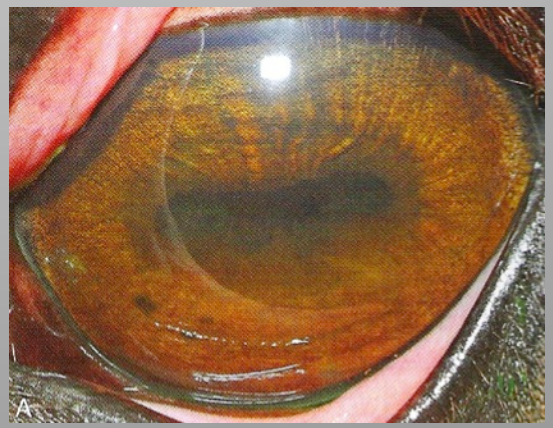


Dwyer, 2012

Equine Recurrent Uveitis

- Aka moon blindness, iridocyclitis, and periodic ophthalmia
- Recurrent episodes of immune mediated inflammation
- Sometimes linked to leptospirosis
- Breed predilection in Appaloosas
- Most common cause of blindness in horses

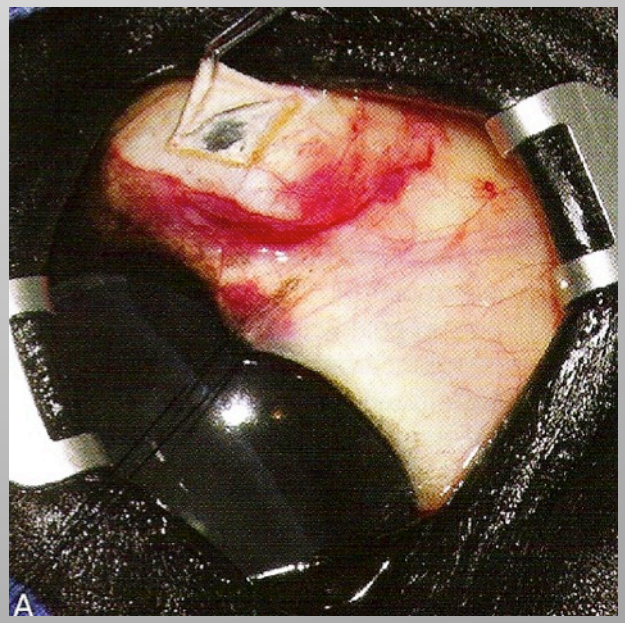




Gilger, 2011

ERU - Treatment

- Environmental management
  - Eliminate allergens, increase insect control, decrease sun exposure
  - Decrease trauma to the eye, use a fly mask
- Medical therapy
  - Reduce discomfort: atropine
  - Decrease inflammation: corticosteroids, NSAIDs
- Surgical therapy
  - Cyclosporine implants: decrease rate and duration of episodes



Gilger, 2011

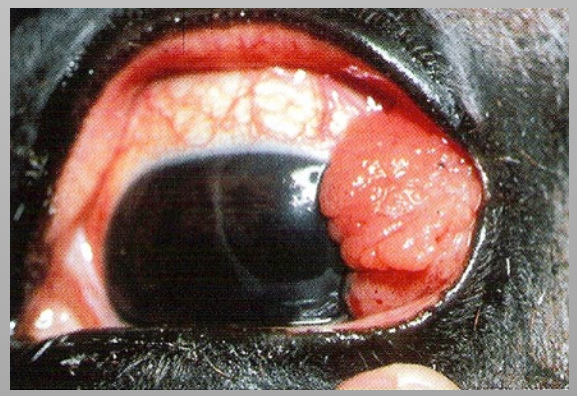
Neoplasia

- 10% of neoplasia in horses affects the eye or eyelids
- "A universally acceptable standard treatment modality for a specific equine periocular tumor does not exist."
  (Giuliano, 2010)

Giuliano, 2010

Squamous Cell Carcinoma

- Most common equine neoplasm of the eye
- Locally invasive and slow to metastasize
- Increased prevalence with age, draft breeds and Appaloosas, and horses with minimal skin pigmentation



Gilger, 2011

Sarcoids

- Most common neoplasm of horses
- Metastasis is rare, but recurrence is common
- Often invades the subcutis and deeper muscle
- Associated with bovine papilloma virus
- Classified as:

Occult

Verrucose

Nodular

Fibroblastic

Mixed

Melanoma

- Relatively uncommon
- Slowly progressive, usually within the skin and pigmented
- Not associated with sun exposure, but most common in gray or white horses

Gilger, 2011

Lymphosarcoma

- Relatively uncommon
- Long term prognosis is poor for survival due to the common presence of systemic disease
- May be associated with systemic signs of lethargy, fever, weight loss, or limb swelling

Gilger, 2011

Germann, 2008

Treatment Options

- Surgical excision
  - High recurrence rate if used without another therapy
- Chemotherapy
  - Local injection of cisplatin or implantation of cisplatin beads
- Cryotherapy
  - Double or triple freeze/thaw cycle
- *Immunotherapy*
  - *Local injection of BCG (bacterial extract)*
  - *Good response for nodular and fibroblastic sarcoids*

Treatment Options

- *Photodynamic therapy*
  - *Local injection of a photosensitizer into the wound bed after surgical excision, followed by irradiation with light of a specific wavelength*
- *Hyperthermia*
  - *Radiofrequency device heats tissue to preferentially destroy tumor cells*
- *Brachytherapy*
  - *Small radioactive sources placed within the tumor*
  - *Limited availability*

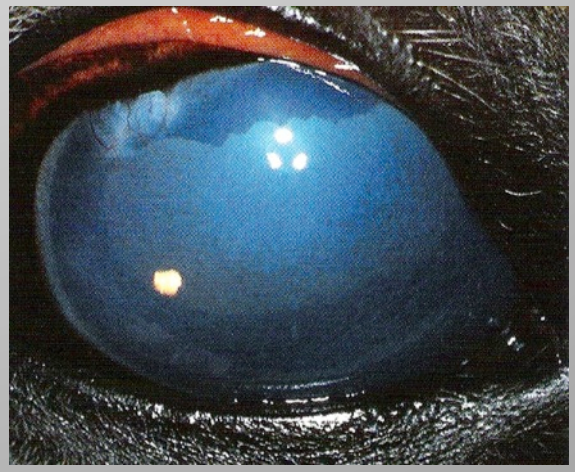
Cataracts

- Congenital (present since birth) or acquired due to uveitis or trauma
- Treatment: phacoemulsification
  - High frequency ultrasonic vibrations break down the lens
  - Lens is withdrawn through a needle
  - Intraocular lens implant may or may not be placed
  - Vision is still considered compromised after surgery

Gilger, 2011

Glaucoma

- A disorder of fluid flow out of the eye that results in increased pressure within the eye
- Most cases are associated with uveitis
- Treatment:
  - Medications to decrease fluid production, increase fluid outflow, and decrease inflammation
  - Various surgical options based on whether or not the eye is still visual



Gilger, 2011

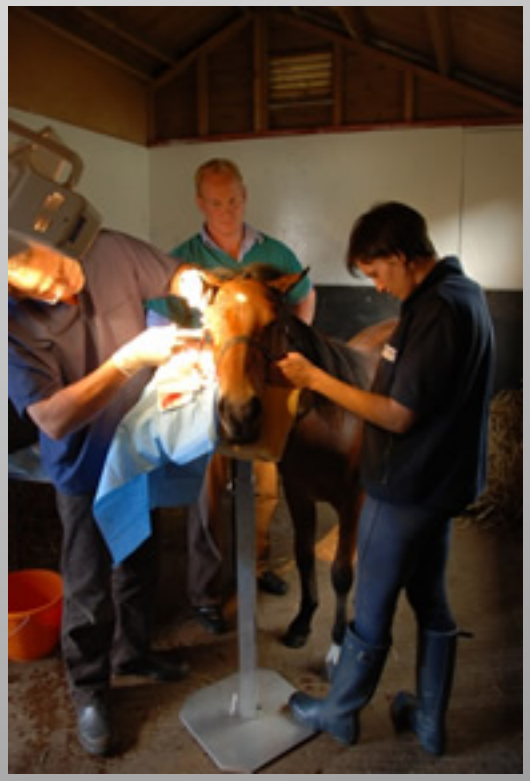
Common Procedures

- Placement of a subpalpebral lavage tube
- Entropion repair
- Third eyelid removal
- Conjunctival grafts
- Enucleation

Dwyer, 2012

Standing Procedures

- May be desirable for financial reasons, logistical reasons, or to reduce the risks of general anesthesia in draft horses, geriatric patients, and horses with orthopedic disease
- Appropriate sedation and regional nerve blocks are critical



milbournequine.co.uk

Procedures

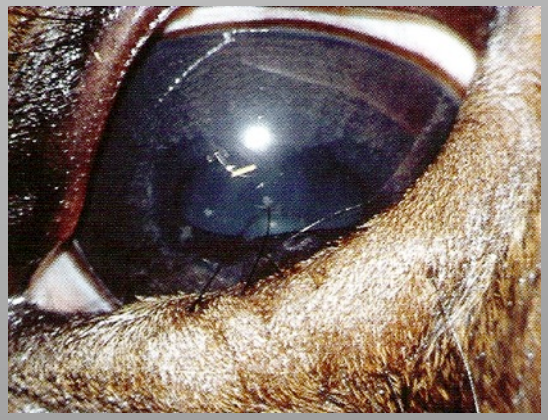
Placement of a Subpalpebral Lavage Tube

- Specialized catheter that allows medication of the eye
- Excellent for ease of treatment and decreased risk of trauma
- Placed under the eyelid using a trocar needle

Gilger, 2011

Entropion Repair

- Inversion of the eyelid margins
- Most common condition of the eye in foals
- Causes:
  - Septic foals or ‘dummy’ foals leading to weight loss or dehydration
  - Possible genetic predisposition in Thoroughbreds and Quarter Horses
  - Eyelid trauma
  - Scarring



Gilger, 2011

Entropion – Treatment

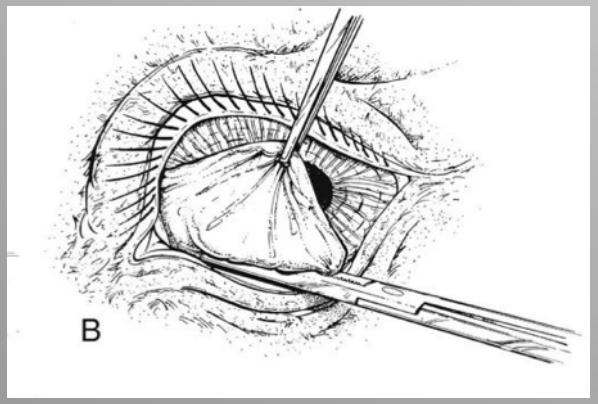
- Temporary surgical repair
  - Everting sutures in place for 2-4 weeks
- Hotz-Celsus procedure
  - Performed if entropion persists despite several attempts at temporary correction
  - A segment of skin is removed to permanently evert the eyelid margin

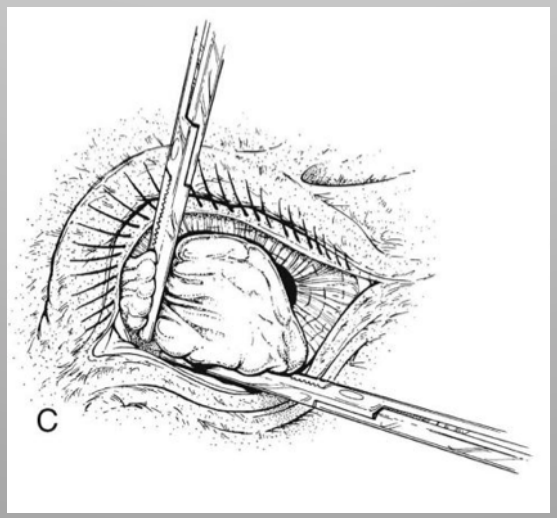
Gilger, 2011

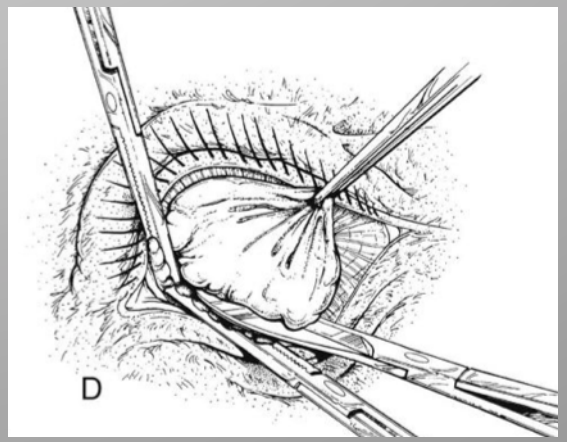
Procedures

Third Eyelid Removal

- Performed for advanced neoplasia of the third eyelid
- Clamped and removed around the T-shaped cartilage
- Conjunctiva may or may not be sutured



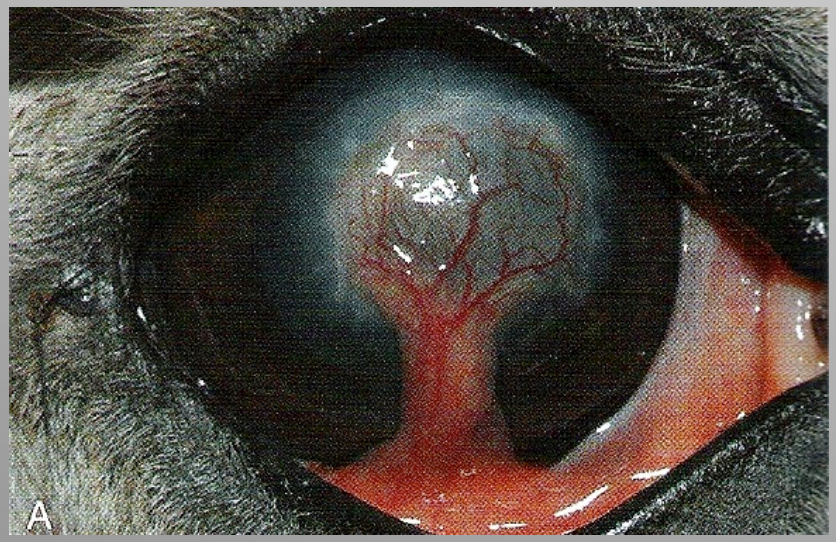




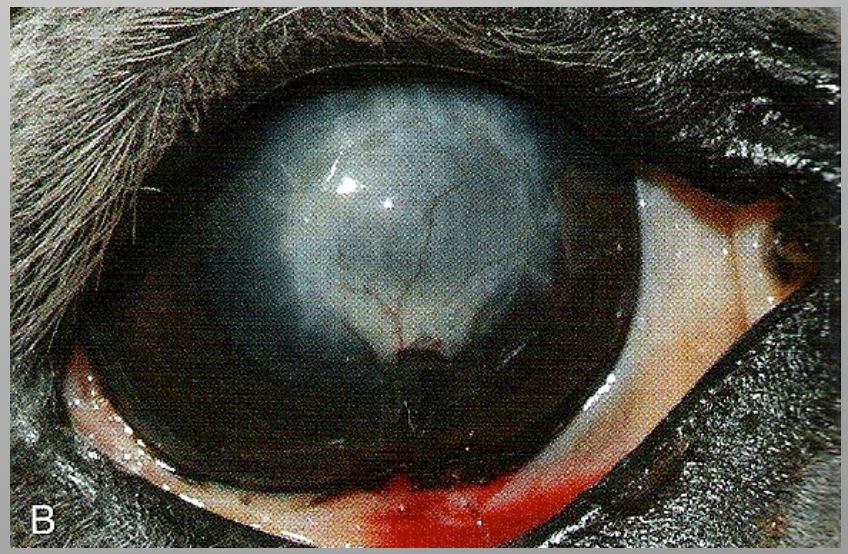
Auer, 2012

Conjunctival Grafts

- Performed for deep, melting, or nonhealing ulcers that require immediate vascularization
- Provide growth factors, cell coverage, and structural support



6 weeks postoperatively

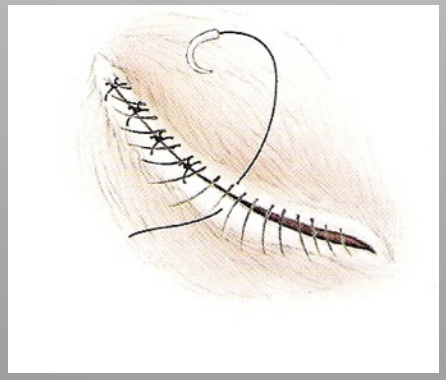


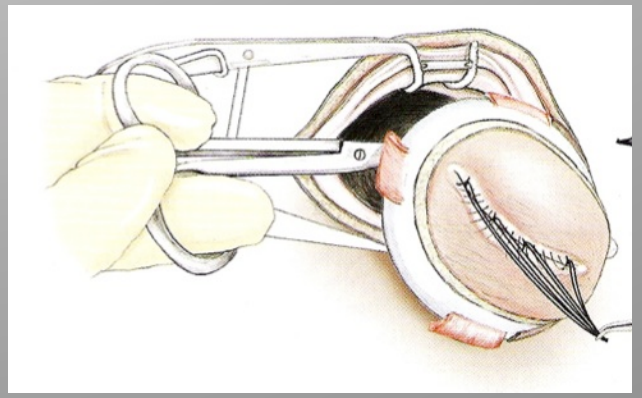
Gilger, 2011

Trimmed pedicle

Enucleation

- Indicated for removal of a painful, blind, deformed, or traumatized eye, or for extensive neoplasia or infection
- Cosmetic alternatives exist, but all require ongoing maintenance, have more complications, and require a financial investment
- Eyelid margins are temporarily apposed
- Incision made close to the eyelid margin, and the eye is dissected out





Gilger, 2011

Procedures

Enucleation

Auer, 2012

Procedures

After Enucleation… What to Expect

- Horses usually adapt well
- Adaptation is quicker if the eye was blind
- Sometimes better if led and approached on the visual side
- Injections given on the visual side
- For safety reasons, ride with caution
- Recent study of 34 horses:
  - 85% returned to their previous discipline
  - Flat racing, steeplechase racing, dressage, eventing, hunter/jumper, trail riding, lesson work, breeding

    (Utter et al, 2010)

Gilger, 2011

Blind Horses

- Causes:
  - Recurrent uveitis (most common)
  - Corneal disease
  - Trauma
  - Neoplasia
  - Infection
- Key points:
  - Temperament of the horse
  - Dedication of the owner
  - Safe and predictable environment

Adaptation

- Onset is often gradual
- Progressive uncertainty, especially in low light
- Transition period with unpredictable behavior
  - Lasts from a few days to a few weeks
  - Close monitoring in a stall or small paddock
  - Frequent handling and attention
  - Predictable daily routine
- Kept alone or with a single companion
- Environment
  - Smooth walls and fences; eliminate hazards
  - Stall with a sliding door or a door that swings out into the aisle
  - Care with wind, loud noises, or loose animals
  - Walk the perimeter of the pasture

Blindness

Management

- Talk calmly and touch often
- Teach verbal commands
- Choose a quiet companion
- Set limits for behavior and reinforce them
- Practice loading and unloading on a trailer

Gilger, 2011

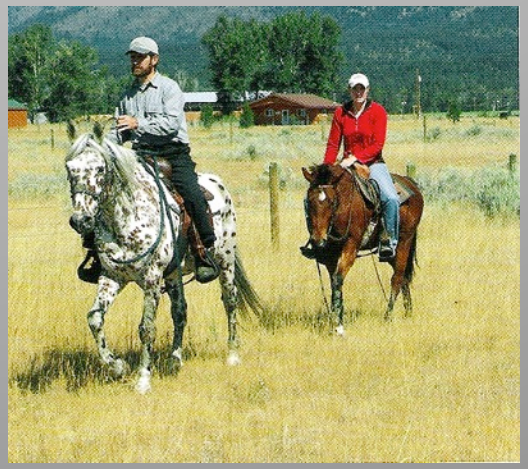
Broodmares

- Similar breeding behavior
- Do not respond to artificial light; most cycle normally by April
- Not as likely to foal at night
- Rarely, can be a genetic predisposition in Appaloosas or European Warmbloods
- Show strong maternal behavior
  - Often more relaxed if the foal wears a bell
  - May panic if separated; always handle and restrain the mare and foal so she knows the foal is near

Gilger, 2011

Lifestyle

- Safety concerns preclude a veterinarian from advising a client to ride a blind horse
- Pasture pets
- Trail horses
- Therapeutic riding programs
- Dressage
- Reining
- Safety must be a priority
- www.blindhorses.org



Gilger, 2011

Conclusion

- Injuries to the eye should be seen by a veterinarian
- Applying medication without an examination or neglect of a painful eye can cause very serious complications, including vision loss
- Common conditions of the eye in horses include corneal ulcers, eyelid lacerations, uveitis, neoplasia, cataracts, and glaucoma; these can all be addressed and treated if caught early
- A painful or traumatized eye is an emergency!

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