

Enucleation (Outline)

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Definitions:

Enucleation: removal of the globe, conjunctiva, nictitating membrane, and lacrimal gland after the eye muscles and optic nerve have been severed (subconjunctival)

Exenteration Extirpation: removal of the entire contents of the orbit. (transpalpebral ablation).

Exophthalmos involves a normal-sized globe that is pushed forward by a space-occupying lesion in the orbit, most commonly a retrobulbar abscess, cellulitis, or neoplasm. Resistance to retropulsion.

Buphthalmos involves a normally positioned globe that is enlarged because of glaucoma. No resistance to retropulsion. Corneal edema. Linear streaks in cornea due to breaks in Descemet's membrane

Possible indications for enucleation

Squamous cell carcinoma

Lymphosarcoma

Chronic glaucoma

Prolapsed retrobulbar fat (Phthisis bulbi)

Severe trauma or proptosis.

Rupture

Chronic endophthalmitis or panophthalmitis

Retrobulbar abscessation; periorbital cellulitis

Perforating ulcers

Lacerations, orbital fractures, foreign bodies

Squamous cell carcinoma (SCC)

75% of lesions involve bulbar conjunctiva and cornea (90% limbus, 10% cornea)

25% involve palpebral conjunctiva, nictitating membrane, eyelid skin

Options for treatment:

Cryotherapy; Excision/cryotherapy; Hyperthermia; Enucleation/Exenteration; B radiation with strontium applicator; Immunotherapy

Cryotherapy or hyperthermia Small lesions, < 2.5 cm treated with or without prior surgical debulking resulted in 97% success rate after 1-2 treatments.

Exenteration of 17/21 cattle with SCC

Mean survival time after surgery was 15 months .

Recurrence evident in 6 of 17 cases within 2 to 14 months after surgery.

Lymphosarcoma

Most frequent cause of exophthalmos

Diagnosis

Clinical signs

BLV Serology

US/ Aspirate with cytology

Enucleation not permanent cure

Check regional lymphnodes – cull if lymphadenopathy

Proposed/ ruptured eye – usually traumatic

Phthisis bulbi – prolapse fat. Differentiate from lymphosarcoma

Cataract. May be congenital or associated with BVD, toxic plants

Anesthesia. Rarely done under general anesthesia

Sedation

Temperament of animal

Sedation used in 19/53 – 36% cases presented for enucleation

Xylazine: 0.02-0.05 mg/kg IM/IV

Ketamine Stun: 20:40:60 Butorphanol, xylazine, ketamine

Acepromazine/xylazine: 10/5mg or 10/10mg

Auriculopalpebral Nerve Block

Prevents eyelid closure during examination of eyeball

Blocks the motor to the eye. Paralyzes orbicularis oculi muscle

Does not produce analgesia of the eye or the lids.

Procedure

Insert needle in front of base of ear at the end of the zygomatic arch

Introduce needle until its point lies at the dorsal border of the arch

Inject 10-15 ml of 2% lidocaine

Retrobulbar block

Procedure

10 ml lidocaine injected through the dorsal, ventral, medial and lateral canthi

Infiltration of the eyelid margins.

Problems:

Intraneural injection with acute collapse or death, rupture of the globe, hemorrhage.

Lidocaine can diffuse through optic foramen into the brain

Peterson block

Procedure

10 cm slightly curved 18 gauge needle is inserted in a space bounded by the supraorbital process, zygomatic arch and the coronoid process to reach the pterygopalatine fossa

After aspiration to prevent injection into the internal maxillary artery, 20 - 30 ml of lidocaine is infused retrobulbar

Problems:

Injection into turbinates; variable response

Enucleation/ exenteration procedure

Procedure:

Suture/clamp lids

Incision follows 2-3cm from lid margins

Blunt/sharp dissection of SQ/deep fascia along orbital rim

Medial and lateral orbital ligaments are cut.

Continue dissecting transpalpebral cutting through the orbicularis oculi and around the conjunctival fornices.

Dissection follows bony part of orbit to apex to optic nerve/muscle cone

Curved hemostat on optic nerve and blood vessels

Optic nerve, retrobulbar muscles severed

Blood vessels clamped if required

Debridement of orbital tissue

Packing – sterile gauze. Remove in 48 hours

Suture incision – horizontal mattress non-absorbable.

Postoperative care:

Antibiotic Flunixin/meloxicam

Anti-inflammatory

Monitor for infection

Postop complications

Para-orbital infection (10/53 cases 19%)

More common in field conditions

Less common with exenteration

No significant association ($P > 0.05$) found between ocular diagnosis, age, anesthetic technique or the suture pattern and occurrence of postsurgical complications.

Suture tract infection (6/15: 40%)

Recurrence of disease (5/15: 33%)

Other surgical procedures

Laceration

Entropion possible complication

Procedure:

Tacking eyelid. Simple interrupted; horizontal/vertical mattress non-absorbable

Hotz-Celcus. Incision 3mm parallel to lid margin. Elliptical removal of skin and orbicularis oculi. Check for entropion correction. Remove more skin if necessary. Start suture from center of wound.

Infectious bovine keratoconjunctivitis (IBK)

M bovis – Gram negative organism

Severity influenced by: environment; season; strain; host immune response; concurrent pathogens

Persistent – relapses occur

Susceptible to wide range of antibiotics

Treatment failure: Antibiotic delivery; MIC

Antibiotic routes:

Palpebral & subconjunctival

Above MIC tear levels obtained with following:

1ml of oxytet 100 for 24 hours

1ml procaine pen (subpalpebral) 35 hours

Procaine pen study: Once a day x 3 subpalpebral injection (Pen/steroid)

Not better than no treatment in naturally occurring IBK.

Bulbar subconjunctival penicillin vs oxytet:

Similar reduction in corneal ulcer healing times
Greater recurrence and shedding in penicillin calves
Bulbar subconjunctival procaine penicillin 300.000iu/ml recommendations:
1-2ml at 36 hour intervals for 2-3 treatments
Treat both eyes even if one is unaffected
Overall LA200 at 20mg/kg IM lower recurrence and shedding

Topical route:

Topical cloxacillin: 2 treatments 72 hours apart as effective as 2 LA200
IM shots at 20mg/kg
No meat or milk with drawal

Systemic route:

Oxytet
Conjunctival concentrations for 20 hours following 20mg/kg IM
Localize/concentrate in lacrimal gland, conjunctiva and cornea
Herd outbreak: treat all with single shot then oral chlortetra
2g/250kg. Significant reduction in incidence
Florfenicol One study showed better effect than oxytetracycline.
Related to oxytet resistance.

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