Canine Ophthalmic Emergencies: Part 1

Ocular emergencies can be daunting as they require rapid assessment and diagnosis. Treatment needs to be timely, appropriate and often aggressive to relieve pain and potentially save vision and the globe. Knowing how to recognise and treat the more common ophthalmic emergencies can lead to positive outcomes for all involved. Part 1 of this article reviews globe proptosis, glaucoma, lens luxation and sudden onset blindness. Part 2 in the next issue will cover trauma including eyelid and corneal lacerations, foreign bodies, melting ulcers and descemetocoeles.

Key words: ophthalmic, emergency, canine, eye, proptosis, luxation, blindness

Globe proptosis

Proptosis is forward displacement of the globe beyond the orbital rim. Spasm of the eyelids prevents spontaneous return of the globe into the orbit (Figure 1a). Trauma of this nature is most often caused by road traffic accidents or dog attacks. It is much more common in brachycephalic breeds as the orbit is shallow and proptosis may occur with relatively little trauma. The eye needs to be kept moist from the beginning, even with tap water or Vaseline, before arrival at the clinic. Topical lubricant or antibiotic ointment should be applied as soon as the animal arrives at the surgery. Once the patient has been stabilised, with particular focus on head trauma and shock, the extent of ocular damage can be assessed. Negative prognostic indicators include rupture of three or more extraocular muscles, globe rupture, extensive hyphaema, a negative dazzle reflex and a negative consensual pupillary light reflex (PLR). In this situation, enucleation may be the best course of action. However, globes that are intact and have some potential for salvage are best repositioned and then later reassessed to determine if there is comfort and vision. Prompt treatment is essential if the patient is stable, as the sooner the globe is replaced, the better the prognosis. General anaesthesia is required. A lateral canthotomy makes the procedure easier but isn’t always necessary. Topical lubricating gel or antibiotic ointment should be applied to the globe. The eyelid margins need to be pulled anteriorly over the equator of the globe, whilst it is gently but firmly pushed back into the orbit. Accurate placement of the sutures is important, to avoid suture material rubbing on the globe. Directing the needle through the “grey line” or meibomian gland orifices is a useful landmark. The suture ends can be tied in two to three horizontal mattress sutures are placed through stents to reduce tension (Figure 2).

1. The eyelids may be grasped and pulled outwards with Allis tissue forceps, attaching them perpendicular to the eyelid margin and at least 5mm in from the leading edge. Simultaneously the globe is gently but firmly pushed back into the orbit with digital pressure or a scalpel handle. The lateral canthotomy is repaired and a temporary tarsorrhaphy is performed, as shown in Figure 1b. Two to three horizontal mattress sutures are placed through stents to reduce tension (Figure 2).

2. Two to three horizontal mattress sutures are placed through stents without tying knots. A scalpel handle can be placed across the cornea, gently but firmly pushing the globe back into the socket, while simultaneously pulling the preplaced sutures outwards, drawing the eyelid margins over the globe. The scalpel handle is withdrawn once the eyelids are in the correct position over the globe, and the sutures can then be tied. Accurate placement of the sutures is important, to avoid suture material rubbing on the globe. The needle through the “grey line” or meibomian gland orifices is a useful landmark. The suture ends can be tied in long bows, so that they may be undone for future examination and re-tied if needed. The temporary tarsorrhaphy protects the cornea from desiccation and the globe from repeat proptosis until the orbital soft tissue swelling subsides. Topical broad spectrum antibiotics and atropine may be applied through a gap at the medial canthus. Systemic nonsteroidal anti-inflammatory drugs (NSAIDs) and antibiotics are also prescribed. An Elizabethan collar is required to prevent self-trauma.

The sutures are left in place for at least two weeks (and up to three weeks), at which time the globe can be reassessed.
**Figure 1a:** Proptosis in a Shih tzu. The equator of the globe is anterior to the eyelid margin. There is conjunctival hyperaemia due to congestion and inflammation, and the corneal surface is dry due to lagophthalmos.

**Figure 1b:** Immediate post-op appearance of the eye featured in 1a. A temporary tarsorrhaphy has been performed using stents made from IV tubing and two horizontal mattress sutures.

**Figure 2:** Temporary tarsorrhaphy technique.

a) Using 3/0 to 4/0 nonabsorbable suture material, the swaged-on needle is passed through the stent. It then enters the upper eyelid approximately 1 cm from the eyelid margin and exits just anterior to the ‘grey line’ created by the meibomian gland openings. The needle is then directed to enter at the ‘grey line’ of the lower eyelid, exiting near the haired/nonhaired junction, and is passed through a second stent. The needle is directed back out through the stent and the previous suture pattern is repeated in reverse, from the lower eyelid to the upper eyelid.

b) Two to three sutures are preplaced, and then they are tightened and tied.

**Figure 3:** After temporary tarsorrhaphy removal post proptosis, the right eye of this Cavalier King Charles spaniel has exotropia (lateral strabismus), conjunctival hyperaemia, a dull flash reflection due to low tear production, a dilated pupil and tapetal hyperreflectivity. The eye was blind and the STT reading was 8 mm/minute.

**Figure 4:** Acute glaucoma. There is episcleral congestion, corneal oedema and mydriasis.

**Figure 5:** Subacute glaucoma. There is episcleral congestion, vascularisation over the limbus into the peripheral cornea, corneal oedema and mydriasis, along with iris rests and nuclear sclerosis of the lens.

Glaucoma

Glaucoma is a large, diverse group of painful and blinding disorders in which the IOP is too high for normal function of the optic nerve and retina. There are a range of clinical signs which include episcleral congestion, corneal oedema and mydriasis, along with vision deficits (Figures 4 and 5). A sustained IOP of over 25 mmHg is necessary for glaucoma to develop. Chronic glaucoma is not an emergency,