Standing Ophthalmic Surgeries in Horses

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KEYWORDS

• Standing surgery • Ophthalmology • Horse • Eye

KEY POINTS

- Ophthalmic procedures are performed on very delicate, sensitive, and thin ocular tissues, such that one wrong movement by the horse or surgeon could cause catastrophic problems resulting in blindness and/or loss of the globe.
- Ophthalmic nerve blocks should be performed when ophthalmic procedures are being performed on the standing sedated horse.
- Surgical eyelid procedures that can be performed on standing sedated horses include entropion in the foal, traumatic eyelid laceration repair, and biopsy/therapy for eyelid neoplasia.
- A corneal biopsy or superficial keratectomy can be performed on the standing sedated horse and should be performed when cytology is inconclusive and a superficial corneal disease is present.
- An exenteration refers to the removal of the globe and as much of the ocular contents as possible – this surgical procedure is a little more challenging than an enucleation on a standing horse but can still be performed.

INTRODUCTION

Standing surgery in horses is gaining popularity among horse owners and veterinarians, primarily because of elimination of the risks and costs of general anesthesia. More types of standing ophthalmic procedures and surgeries in the horse have therefore been attempted and described in recent years. Disadvantages of performing standing ophthalmic surgeries in the horse include the increased risk of causing tissue damage arising from the inability to eliminate eye and head movements, which preclude one's proficiency in using an operating microscope to complete the often

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precise surgeries. Ophthalmic procedures are performed on very delicate, sensitive, and thin ocular tissues, such that one wrong movement by the horse or surgeon could cause catastrophic problems resulting in blindness and/or loss of the globe. Local anesthesia, heavy sedation, nose twitches, and orbital and local nerve blocks of the involved motor and sensory nerves are therefore essential in achieving a good outcome after a standing equine ophthalmic procedure or surgery. Most of these standing ocular procedures in horses should not be attempted by inexperienced surgeons. **Table 1** gives an overview of the ophthalmic procedures and surgeries that can be performed on a standing sedated horse.

ANALGESIA AND BLOCKS

Tetracaine and proparacaine are the 2 topical anesthetics that have most commonly been investigated for their ability to perform anesthesia of the equine cornea.[1–3] These agents are used to locally desensitize the conjunctiva and cornea when procedures are performed in these tissues.[4] It has been shown that 0.5% tetracaine and 0.5% proparacaine will have their maximal effect in horses after 5 to 10 minutes, and the effective duration will be 20 to 30 minutes.[1–3] It has also been shown that whereas proparacaine does not have a complete anesthetic effect on the equine cornea, tetracaine does achieve complete anesthesia.[1,3] Topical tetracaine is therefore a better topical anesthetic for standing equine ophthalmic procedures. A recent study by Pucket and colleagues[5] looked at the duration and efficacy of 4 different topical anesthetics on corneal sensitivity; 0.5% proparacaine hydrochloride, 0.5% bupivacaine hydrochloride, 2% lidocaine hydrochloride, and 2% mepivacaine hydrochloride solutions. The study concluded that 0.5% proparacaine and 2% lidocaine solutions induce an adequate level of short-duration corneal anesthesia (respectively 35 minutes and 45 minutes for the 2 topical anesthetics), whereas the use of 0.5% bupivacaine solution showed usefulness for longer-duration corneal procedures, owing to the longer efficacy of this topical anesthetic (duration 60 minutes). The topical 2% mepivacaine solution never reached maximal anesthetic impact in the study, and was therefore the least effective topical anesthetic.[5] Application of the local anesthetic to the conjunctiva and cornea can be achieved with 0.5 to 1 mL of the topical anesthetic in a syringe with a 25-gauge needle. For safety and to make it easier to apply the anesthesia, the needle tip should be removed by bending the needle tip a couple of times to each side.

The nerve blocks used in veterinary ophthalmology for standing surgeries are normally performed with either 2% lidocaine for short procedures, or a half-and-half solution of 2% lidocaine and 2% mepivacaine (carbocaine) for procedures that take longer than 30 to 45 minutes, owing to the rapid effect of lidocaine and the longer-lasting effect of mepivacaine.[6] The auriculopalpebral nerve block is the most used nerve block for equine ophthalmic procedures.[4] This block is normally performed with 1 to 2 mL of 2% lidocaine, and blocks the motor branch of the facial nerve (cranial nerve nucleus [CNN] VII), which innervates the orbicularis oculi muscle of the upper and lower eyelids of the horse. The auriculopalpebral nerve block can be performed in 3 places in the horse. The lower portion of the facial nerve can be palpated over the zygomatic arch, where it is easiest to perform the block (point A in **Fig. 1**). The higher type of this block can be performed superior to the zygomatic arch and inferior to the ear cartilage (point B in **Fig. 1**). This type of auriculopalpebral nerve block reduces the activity of most branches of the facial nerve and will therefore be more effective than blocking the lower portion. Lastly, auriculopalpebral nerve block can be performed at the base of the ear (points C and D in **Fig. 1**). This location for