EQU_021 Guttural pouch trocarisation via the modified Whitehouse approach in horses

I. OBJECTIVE

To describe the procedure of guttural pouch trocarisation via the modified-Whitehouse approach under standing sedation in the horse, a method that is considered safe and does not compromise the health of the animal.

II. DEFINITIONS

- **Guttural pouch**: The guttural pouches (GP) are a pair of air-filled diverticula of the auditory tube that connect the nasopharynx to the middle ear in horses.
- **Trocarisation**: The act of passing a trocar (essentially a metal or plastic cannula) into a body cavity. In this context, a blunt-ended trocar will be introduced into the guttural pouch to function as a portal for the passage of other surgical instruments.
- **Modified-Whitehouse approach**: One of four surgical approaches to the medial compartment of the guttural pouch. This approach is most easily performed under standing sedation.

III. COMMENTS / RECOMMENDATIONS

- This SOP describes "surgical access" to the guttural pouch. It does not describe any subsequent surgical procedures once the pouch has been accessed (including closure of the surgical site).
- Relative to animal ethics applications, when using this SOP, the following must be described in the individual ethics application: the subsequent surgical procedures/details following access to the guttural pouch (i.e. what surgery are you performing), and any intended variation to this procedure.
- This procedure should always be performed in the stocks under standing sedation (i.e. xylazine hydrochloride and/or detomidine hydrochloride and/or butorphanol tartrate) which is administered intravenously as a bolus, and then intermittently as needed throughout the procedure (under veterinary direction).
- The procedure should be performed in a quiet, low traffic area that is suitable for standing surgery to minimise risk of contamination and maintain a suitable level of sedation.
- This procedure should always be performed with adequate infiltration of local analgesia into the surgical site.
- To avoid complications such as damage to neurovascular structures within the guttural pouches or structures in close proximity to the guttural pouches (e.g. parotid salivary gland, linguofacial vein etc.), an accurate and thorough appreciation of the anatomy is critical.
- This procedure must be performed under endoscopic guidance. The floor of the medial compartment of the guttural pouch should be visualised with a flexible endoscope secured within the guttural pouch that is being operated on to prevent damage to neurovascular structures upon entry into the pouch with the trocar.
- The person performing the procedure needs to be a board certified large animal surgeon or a surgical resident under the supervision of an equine surgeon specialist.
- Care must be taken to adhere to an aseptic technique throughout the surgical procedure

IV. EQUIPMENT

- Standing stocks
- Suspended dental halter
- Sedation: Detomidine 0.01-0.02 mg/kg IV, Xylazine 0.3-0.5 mg/kg IV, Butorphanol 0.01-0.02mg/kg IV
- Chlorhexidine solution
- 70% isopropyl alcohol
- Nose twitch – for local analgesia infiltration

- Needles (1inch), 22-25 gauge – for local analgesia infiltration
- Syringe (10mL) – for local analgesia infiltration
- Mepivicaine or lignocaine hydrochloride 2% (~10mL) – for local analgesia infiltration
- Syringe (50mL) – for topical analgesia of the nasal and pharyngeal mucosa for better tolerance of an indwelling endoscope
- Mepivicaine or lignocaine hydrochloride 2% (~50-100mL) – for topical analgesia of the nasal and pharyngeal mucosa for better tolerance of an indwelling endoscope
- Penrose drain – for securing the endoscope once its in position
- Flexible equine endoscope with a biopsy channel
- Sterile gown, gloves and drapes
- #11 scalpel blade
- Stainless steel or plastic circular blunt trocar and cannula (e.g. 21cm long laparoscopic cannula which comes in different shaft sizes)
- Standard large animal surgical kit
- Equipment needed for specific procedure following trocarisation - e.g. laparoscopic scissors

V. PROCEDURE

1. Sedate the horse in the standing stocks as necessary using any combination of detomidine 0.01-0.02 mg/kg IV, Xylazine 0.3-0.5 mg/kg IV, and/or Butorphanol 0.01-0.02mg/kg IV. Top up with IV boluses as required under veterinary direction.
2. Using a dental halter, suspend the head and neck in slight extension from the front of the stock, so that the ramus of the mandible is maintained in the same plane as the withers.
3. Clip the hair with a wide margin around the surgical site – i.e. the region extending from the base of the ear, along the ramus of the mandible and cranial third of the neck.
4. Perform non-sterile preparation with chlorhexidine and 70% isopropyl alcohol of the surgical site.
5. With a nose twitch applied (if needed), infiltrate 5-10mL of mepivacaine or lignocaine hydrochloride 2% into the subcutaneous tissue immediately ventral to the insertion of the sternocephalicus tendon.
6. Spray 50-100mL of mepivacaine or lignocaine hydrochloride 2% topically onto the ipsilateral nasal and pharyngeal mucosa through the biopsy channel of the endoscope to desensitize the areas.
7. After 1-2 minutes, have an assistant pass the endoscope up the previously desensitised ipsilateral nostril and into the guttural pouch that is being operated on and secure the endoscope in place using a Penrose drain tied to the metal rings of the halter on either side of the face. The endoscope should be positioned so that the floor of the medial compartment is in view.
8. Perform a sterile preparation of the surgical site with chlorhexidine for a total contact time of 5 minutes or longer.
9. Just before commencement of sterile draping, the antiseptic soap should be rinsed off using 70% isopropyl alcohol until the site is free of soap.
10. Use a #11 scalpel blade to make a 10mm skin incision for trocar placement ventral to the insertion of the sternocephalicus tendon and directly caudal to the ramus of the mandible.
11. Insert the blunt trocar and cannula into the floor of the medial compartment of the guttural pouch aiming in a ventral to dorsal and slightly caudal to cranial direction towards the base of the contralateral ear, whilst visualising the floor via endoscopy at all times. Ensure the entry point is free of any neurovascular structures.
    a. Note: The easily palpable stylohyoid bone can be used as a landmark to guide dissection towards the medial compartment.
12. Once the trocar and cannula have been inserted into the medial compartment, the trocar is removed and cannula left in place, acting as a portal for the subsequent passage of surgical instruments.

VI. REFERENCE INFORMATION

Jukic, C.C., et al., *Evaluation of the effect of laser salpingopharyngostomy on the guttural pouch environment in horses.* Equine Veterinary Journal, 2020. **52**(5): p. 752-759.

- The guttural pouch trocarisation technique has been adopted from this study.

Freeman, D.E., *Update on disorders and treatment of the guttural pouch.* Veterinary Clinics of North America: Equine Practice, 2015. **31**(1): p. 63-89.

- A description of the modified-Whitehouse approach commonly used for treatment of specific cases of guttural pouch disease.

Version #	Reviewing AEC (note: all other relevant AECs ratify the approval)	AEC Review Date	Approval To Date
1	PCA	15/06/2022	15/06/2025