How to Perform a Hysteroscopically Assisted Endometrial Biopsy and Foreign Body Retrieval in Mares

Claire E. Card, DVM, PhD, Diplomate ACT; Sarah Eaton, DVM, Diplomate ACT*; and Farhad Ghasemi, DVM

A pilling instrument under hysteroscopic guidance may be used for foreign body retrieval and biopsy of focal endometrial lesions in chronically infertile mares. Authors’ addresses: Department of Large Animal Clinical Sciences, Western College of Veterinary Medicine, University of Saskatchewan, 52 Campus Drive, Saskatoon, SK, Canada S7N 5B4 (Card, Ghasemi); and Animal Care Hospital, Williams Lake, BC, Canada V2G 5E8 (Eaton); e-mail: sarah.eaton@usask.ca. *Presenting author. © 2010 AAEP.

1. Introduction
Traditionally hysteroscopy has been used to determine the health of the endometrium, inseminate mares, identify foreign bodies, evaluate the nature and condition of tumors or hematomas, explore anomalies such as adhesions, and identify congenital abnormalities.1–3 Recent reports of biofilms and focal lesions in subfertile mares indicate that it is desirable to obtain endometrial biopsies from affected areas of the endometrium in mares.4 Hysteroscopic guidance may be used to obtain biopsies or cultures of affected and non-affected endometrial tissue and may be used to retrieve foreign bodies.5

2. Materials and Methods
The rectum of the mare is emptied, the tail is wrapped, and the perineum is cleansed. Generally, it is advisable to sedate the mare using a combination of alpha agonists and butorphanol. A 1-m gastroscope or videendoscope that has been sterilized and rinsed with sterile water (or saline if chemical sterilization) is used. The sides of the endoscope are lubricated using sterile lubricant. A clinician wearing a rectal sleeve and sterile glove passes the tip of the endoscope through the vagina, cervical canal, and into the uterus. The cervix is held closed around the endoscope. Insufflation is used to view the uterine body and bifurcation of the uterine horns, and low or intermittent air flow is used to maintain insufflation during the examination.

The body and both uterine horns may be evaluated for areas of interest by passing the endoscope into the various regions of the uterus. The healthy endometrium of the mare is uniform in texture and color. Normal structures include endometrial lymphatic and glandular cysts. Areas of interest are identified as discolored areas, ulcerations, plaque-like lesions, or endometrium covered with discharge. Uterine fluid may be aspirated or a catheter inserted through the working channel of the endoscope to obtain a fluid sample. The endoscope is positioned just behind an
area of interest, such as the area to be biopsied or near the foreign bodies. A sterile Pilling biopsy instrument is inserted with the jaws held closed through the cervix next to the endoscope. The cervix is again held shut around the equipment. On entering the uterus, the biopsy instrument is immediately directly to the left or right depending on which side or horn of the uterus the area of interest is located. The instrument is slowly and gently advanced to bring it into the field of view. The biopsy instrument is positioned adjacent to the area to be biopsied or the foreign body, and the jaws are opened to grasp the desired endometrial tissue or the foreign body.

Samples such as intrauterine fluid, cytologies, or cultures should be obtained before a biopsy because bleeding from an endometrial biopsy may contaminate these samples. After the sample collection or retrieval of the foreign body, the insufflation is turned off, and the working channel is opened so the air is allowed to escape, or suction may be applied to remove the air. Gentle rectal massage may also be performed to facilitate the expulsion of the air from the uterus. Maintenance protocols for disinfection of the equipment after each procedure are important, because repairs on the equipment are costly, and there is a need to minimize the risk of iatrogenic transfer of infections between mares. Imprints of biopsy specimens onto sterile slides may be obtained for a biopsy cytology, and the biopsy may be divided longitudinally for the purpose of biopsy culture and histopathology.

3. Results

This procedure produced a high rate of success (5/5) in the situation where the tip or multiple pieces of culture swabs were lodged in the uterus and could not be retrieved by manual means or uterine lavage (Fig. 1). The procedure was also used successfully to biopsy affected areas of the endometrium such as: ulcers (Fig. 2), discolored areas (Fig. 3), ulcerations with focal areas of discharge accumulation (Fig. 4),
and plaques (Fig. 5) in chronically subfertile mares with endometritis. There is minimal trauma to the endometrium and cervix when this technique is performed appropriately, and the retrieval process is fast. Multiple biopsies may be taken, or foreign bodies may be retrieved in one session.

4. Discussion

The endometrium of the fertile mare is pale pink and during estrus will have edematous endometrial folds covered with a glistening mucus and a homogenous texture. It may contain endometrial glandular cysts and endometrial lymphatic cysts.1 Chronically subfertile mares may develop pathologic biofilms, and the interior of the uterus may have focially affected areas.4 Endoscopic examination of the uterine lumen allows an evaluation of the extent and the significance of the lesions; however, targeted biopsy is a relatively new idea.2,5 LeBlanc and Causey4 reported a high rate of false negatives in uterine swab cultures, and improved methods of pathogen detection are needed. Hecker and Hospes5 reported that hysteroscopically guided biopsies showed statistically worse diagnoses compared with blind biopsies. The hysteroscopically guided biopsy is a tool that should be applied in select cases of subfertility in mares. Hysteroscopic visual-

The working channel of the endoscope may also be used to insert instruments to perform biopsies; however, samples obtained through this method are small in size and shallow in depth compared with biopsies obtained using the Pilling instrument. Conventional means of foreign body retrieval for items such as broken or missing swab tips usually involves the manual dilation of the cervical canal and insertion of a finger(s) to retrieve the parts of the swab or induction of estrus to see if the mare expells the material on her own. Alternatively, uterine lavage may be tried to retrieve the missing portions of the swab. In some mares, however, these techniques are not successful because the cervix may be difficult to dilate or the broken piece of the swab is located out of reach. The Pilling instrument may be used to either grab the foreign body or move it back toward the cervix so it may be retrieved manually. Mares typically develop endometritis in response to swab-type foreign bodies; therefore, it is desirable to remove them.

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References