How to Perform Bilateral Ovariectomy in the Mare Through Two Paramedian Incisions

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Bilateral ovariectomy performed through two small paramedian incisions provides sufficient exposure of the ovarian pedicle to obtain secure hemostasis, and allows for secure and simple abdominal closure. This technique avoids many of the complications associated with other bilateral ovariectomy approaches. Authors’ addresses: Department of Surgical Sciences, University of Wisconsin, School of Veterinary Medicine, 2015 Linden Drive West, Madison, WI, 53706 (Santschi); University of Minnesota, Department of Population and Clinical Sciences, 1365 Gortner Avenue, St. Paul, MN 55108 (Troedsson). © 2001 AAEP.

1. Introduction

Bilateral ovariectomy in the mare is indicated for sterilization and behavior modification. Various methods can be used for bilateral ovariectomy, and include colpotomy, ventral midline approaches, and laparoscopic methods. The primary challenge in performing an ovariectomy is accessing the ovary and the vascular pedicle. The ovaries are located somewhat remotely from the skin surface, suspended from the dorsal body wall on short vascular pedicles. Removal can be a further challenge due to patient body type, as ovariectomy in deep-bodied maiden mares is especially difficult due to the abdominal depth and shortness of the pedicle.

All ovariectomy procedures have advantages and disadvantages, and the procedure performed depends on instrumentation available, surgeon preference, cost limitations, and mare temperament. Ovariectomy has been associated with a higher incidence of complications than other elective surgical procedures,1 with hemorrhage, eventration, peritonitis, and postoperative pain the most commonly reported.2 To minimize these complications, a bilateral ovariectomy procedure that removes the ovaries while achieving secure hemostasis of the ovarian pedicle and allows secure and simple closure of the abdominal incision would be advantageous. Additional desirable qualities are low cost, no specialized equipment or postoperative care, and if necessary, general anesthesia for a dangerous patient. The goal of this study was to develop a bilateral ovariectomy procedure that attempted to meet as many of these goals as possible.

2. Materials and Methods

Preoperatively, mares are fasted for 36–48 h from hay and grain to reduce colonic bulk and gas. Mares are given 22,000 IU/kg potassium penicillin and 1 mg/kg flunixin meglumine intravenously before surgery. The mares are positioned in dorsal recumbency. A 30 × 20 cm area cranial to the udder is clipped and surgically prepared. An unscrubbed assistant palpates the ovaries per rectum,
and moves one ovary ventrally to contact the ventral body wall. By tapping the body wall, the surgeon and the unscrubbed assistant can determine where the ovary reaches the ventral body wall with the least tension on the ovarian pedicle. This is most often 15–20 cm cranial to the base of the udder and 10–12 cm abaxial to midline. At this location, a 6 cm incision is made through the skin and subcutaneous tissues. The incision is continued through the external sheath, muscle, and internal sheath of the rectus abdominus. The peritoneum is bluntly separated. The surgeon inserts 1 or 2 fingers into the abdomen and locates the ovary (Fig. 1). If uncovered by mesentery, the ovary is grasped with 1 or 2 Allis tissue forceps and exteriorized (Fig. 2). The pedicle of the ovary can be further exposed by pushing down on the ventral abdominal wall or by tilting the head of the surgery table down. If the ovary is covered with mesentery in the abdomen, the assistant can attempt to free it from the mesentery by manipulating the ovary per rectum, usually by moving the ovary laterally and sweeping it along the ventral body wall. If this maneuver is unsuccessful, the ovary can be delivered with the mesentery by enlarging the incision in the rectus abdominus. Once exteriorized, the ovary is freed from the mesentery and the bowel is returned to the abdomen. Hemostasis of the ovarian pedicle is achieved by applying a single 90 mm thoracoabdominal stapling cartridgea (Fig. 3) before removal of the ovary. The TA-90 (green) is preferred due to the long (4.8 mm open, 2.0 mm closed) length of the staple arm. Hemostasis is more complete if the staples are applied with the minimum of tension by pressing downward on the abdomen to reduce the tension on the pedicle. Downward pressure should continue until the staple gun is removed; relaxation on the abdominal wall while the gun is closed on the pedicle can force the staple gun to be displaced from the pedicle, causing the staples to tear out. The pedicle is clamped with a forceps and cut with scissors above the closed staple cartridge, the stapler removed, and the pedicle is inspected for hemorrhage before release. Closure of the incision is performed using #1 Maxon. A single cruciate suture is placed in the rectus abdominus muscle and 2–3 similar sutures in its external sheath. The skin and subcutaneous tissues are closed with 2-0 Maxon in a subcuticular pattern. The opposite ovary is removed in the same fashion.

3. Results
Bilateral ovariectomy through two paramedian incisions was performed in 9 mares (6 with normal-sized ovaries, 3 with one enlarged ovary). Rectal manipulation was unnecessary in the mare with enlarged ovaries, as after removal of the enlarged ovary the normal ovary was brought to the ipsilateral body wall via the first abdominal incision. Hemostasis was achieved in 18 ovaries by overlapping suture (3 ovaries) and a single TA-90 staple cartridge (15 ovaries). After technique development, surgery time averaged 45 minutes. One mare with normal-sized ovaries experienced an episode of postoperative hemorrhage after suture occlusion of an ovarian pedicle due to a technical error. She recovered un-
eventfully. All mares were mildly depressed the day following surgery, and 2 were treated with an additional dose of flunixin meglumine (1 mg/kg), and 3 received 1 gallon of mineral oil via nasogastric tube when their feces were noted to be dry. Four mares had reductions in packed cell volume of 5–7% suggesting hemorrhage, but required no treatment. All mares were acting normally by the second day after surgery when they were discharged. No other complications were observed. Four experimental subjects were immediately turned out in a dry lot, and 5 client mares were handwalked for two weeks after surgery and exercised lightly for an additional two weeks after which they resumed normal activity.

4. Discussion

Bilateral ovariectomy can be performed through two small paramedian incisions (Fig. 4) using rectal manipulation of the ovary. A paramedian incision is advantageous because it is directly over the ovary. Using rectal manipulation, the length of the incision need only be large enough to allow the ovary to be delivered from the abdomen. The rectal manipulation can be eliminated by making an incision large enough to permit the ovary grasped by a hand to be pulled from the abdomen; however, a small incision is advantageous because it prohibits viscera from exiting the abdomen and surrounding the ovarian pedicle.

The tension present on the pedicles of normal ovaries makes exposure of any length of the pedicle difficult. As the overlapping suture method of pedicle hemostasis is most secure when the sutures can be tied with minimal tension and a short portion of pedicle (approximately 5 mm) can be left in place distal to the ligature, it may not be the best method for this approach. Stapling with a single TA-90 cartridge probably provides better hemostasis and is faster and easier to apply. Overall, this bilateral ovariectomy procedure is economical, as there is no special equipment or training necessary. The use of general anesthesia increases the cost, but may be an advantage in mares that will not tolerate a standing procedure. Additional benefits are a secure and simple abdominal closure, and a quick return to exercise in riding horses.

References and Footnote


*TA-90, United States Surgical Corporation, Norwalk, CT 06856.*