Two-Portal Laparoscopic-Assisted Approach for the Treatment of an Unusual Case of Ovarian Remnant Syndrome and Uterine Horn Stump Piometra in a Bitch

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ABSTRACT

Background: The ovarian remnant syndrome (ORS) is the persistence of ovarian activity in spayed bitches or queens, which results from failure in complete gonadal removal or due to the presence of accessory ovaries on the uterine broad ligament. In most of cases, surgical approach may be required in order to both diagnose and treat the syndrome. The current case report describes the usefulness of video-assisted surgery as an alternative to diagnosis and treatment of an unusual case of ORS and stump piometra in a bitch.

Case: The purpose of the current study was to report the case of a 4-year-old Dachshund bitch, bearing paraplegia due to intervertebral disk disease (IVDD), showing estrus and pseudo pregnancy regularly for two years. This report describes the use of alternative exploratory video-assisted laparoscopy followed by ovariectomy as a safe and effective method for both diagnosing and treating the ORS and stump pyometra uterine horn held in HV-UPF. Following complementary exams, the patient was submitted to ultrasonography, which revealed the presence of masses resembling ovaries caudally to the respective renal caudal pole. A two-portal laparoscopic-assisted approach was chosen for the surgical treatment. The intact ovary and a remnant uterine horn stump were present on the right side. On the left side, there was the intact ovary. The overall surgical time was 115 min and the postoperative was uneventful. The patient was discharged following 10 days of the surgery, right after removal of the skin sutures. The excised specimen was referred to the Laboratory of Animal Pathology of the UPF for both macroscopic and histological assessment. The macroscopic exam revealed the presence of both complete ovaries and the remnant uterine horn stump presented remnants of purulent content. The histologic assessment revealed several follicles and corpus luteum, besides mild perifollicular multifocal hemorrhage. On the second ovary, there were ovarian follicles and the remnant uterine horn presented discrete multifocal cystic endometrial hyperplasia.

Discussion: The treatment of choice to ORS is surgical removal of the remnant tissue, especially due to the risk of development of neoplastic disease. The occurrence of ORS, as observed in the current case report, can be attributed to improper surgical technique during elective OVH. In our case, there was incomplete removal of both ovaries and incomplete resection of the right uterine horn. In face of the advantages associated to the laparoscopic access, we opted for a two-portal approach. In this special case, regarding a patient bearing paraplegia and consequent fecal and urinary incontinence, we chose the endosurgical approach due to the reduced incision length, which could have resulted in decreased risk of wound fecal and urine contamination or infection. During laparoscopy, it was seen that the right ovary was intact, without rupture of the suspensory ligament and the presence of a segment of the right uterine horn. In these cases, the remnant tissue is most frequently found on the right side, fairly probably due its deep and cranial anatomical topography. Such condition could lead to poor exposition/viewing of the right pedicle and ovary. In cases of both impaired access and visualization of the mesovarium in patients positioned in dorsal decumbency, it is recommended to slightly rotate the patient in the lateromedial direction to the opposite side. In conclusion, the two-port laparoscopic approach is effective for the surgical management of ovarian remnants associated to stump piometra in the bitch.

Keywords: diagnostic laparoscopy, ovarian remnant syndrome, ovariectomy.
INTRODUCTION

Ovariohysterectomy (OVH) and ovarioectomy (OV) are known as technically simple routine surgeries [1]. However, potentially severe complications may occur regardless of the approach (conventional celiotomy or endosurgical access). One of its main long-term complications is the ovarian remnant syndrome (ORS). Such complication may occur due to continued hormonal ovarian activity in spayed bitches in cases of accessory ovarian tissue at the uterine broad ligament or incomplete ovarian removal during OVH or OV [5].

Minimally invasive surgery has been performed in humans in order to minimize complications related to conventional surgery. Laparoscopic surgery is the current state of the art in minimally surgical access in the human medicine. Such endosurgical approaches have been used in veterinary medicine settings especially due to the possibility of performing at the same time both complementary diagnosis and surgical treatment with minimal surgical trauma and related complications [3].

The current case report describes the usefulness of video-assisted surgery as an alternative on the diagnosis and treatment of an unusual case of SOR and stump piometra in a bitch.

CASE

A 4-year-old Dachshund spayed bitch weighing 7.4 kg, bearing paraplegia due to intervertebral disc disease (IVDD), was referred to the Veterinary Teaching Hospital of Passo Fundo University (UPF) presenting pseudo pregnancy and recurrent signs of estrus during the last 2 years.

Clinical parameters were found normal during physical examination. Complementary blood work (complete hemogram, platelet count, serum albumin, ALT, alkaline phosphatase, BUN) and abdominal ultrasound were carried out. Serum measurements revealed no significant alterations. The hemogram revealed mild leucopenia (5,800 cells/μL).

During ultrasound scan, two masses resembling ovaries were found on the left and right ovarian pedicle areas, at the caudal pole of the kidneys. The right mass presented dimensions of 2.21 cm x 2.11 cm and a cystic formation on the ovarian site, which was referred as an ovarian cyst. The other abdominal organs presented normal ultrasound aspect and position. Based on those findings, SOR was suspected. An exploratory laparoscopy was indicated for both confirmation and treatment.

The premedication consisted of administration of an association of 0.5 mg kg⁻¹ of morphine sulfate (Dimorf®) and 0.5 mg kg⁻¹ of midazolam (Dormonid®), given intramuscularly. General anesthesia was induced 0.5 mg kg⁻¹ using diazepam (Diazepam®) followed by 4 mg kg⁻¹ of propofol (Propovan®), both intravenously. Anesthesia was maintained using isoflurane (Isoflurane®) vaporized in 100% oxygen in a semi-closed circuit. Epidural anesthesia was also carried out using 4 mg kg⁻¹ of lidocaine chloride (Cloridrato de Lidocaína 2%) and 0.1 mg kg⁻¹ of morphine sulfate.

Following patient positioning in dorsal decumbency and surgical field preparation, CO₂ pneumoperitoneum was established following open insertion of a 10-mm trocar at the umbilicus level. A pressure of 12 mmHg was set, using a flow rate of 1 L/min of CO₂. The second port (10 mm) was positioned on the midline, in the prepubic area.

A mass containing a floating volume was identified as a remnant stump of the right uterine horn, besides the presence of both left and right ovaries. The left ovary (Figure 1A) was first excised (Figure 1C) using extracorporeal Roeder’s knot (Figure 1B) with monofilament nylon 0 USP thread.

On the right side (Figure 1D), there were several adhesions among the omentum, the right pancreatic lobe and the right uterine stump. A small amount of purulent fluid was drained during pancreatic adhesiolyis, in the right paralombar gutter. Such complication was managed by raising the uterine horn to the abdominal wall and placement of a transabdominal stay suture; the purulent content was dried using gauze; the lesion site was thoroughly rinsed with 750 mL of PVP-iodine 0.1% solution in normal saline, followed by instillation of 250 mL of normal saline ( Sodium chloride 0.9%). The right mesovarium (Figure 1E) was double ligated using the same technique as for the ligation of the left pedicle (Figure 1F).

Both right ovary and uterine horn stump were withdrawn from the abdomen through the caudal port site, with no need for incision extension. Finally, the pneumoperitoneum was drained and the abdominal wounds were closed in an interrupted cross mattress pattern, using monofilament nylon 2-0 USP thread, and skin was closed using simple interrupted pattern using monofilament nylon 5-0 USP thread.
Postoperative management consisted of pain control using 2.0 mg kg\(^{-1}\) of tramadol chloride (Tramadon\(^{b}\)) subcutaneously, TID, for three days, 0.2 mg kg\(^{-1}\) of meloxicam (Meloxicam\(^{b}\)) subcutaneously, SID, for two days, and antibiotic therapy using 22 mg kg\(^{-1}\) of sodium ampicillin (Amplatil\(^{b}\)) subcutaneously, QID, for 10 days.

The overall surgical time was 115 min and no postoperative complications were noted. The patient was discharged following 10 days of the surgery, right after removal of the skin sutures.

The excised specimen was referred to the Laboratory of Animal Pathology of the UPF for both macroscopic and histological assessment. The macroscopic exam revealed the presence of both complete ovaries and the remnant uterine horn stump presented remnants of purulent content. The histologic assessment revealed several follicles and corpus luteum, besides mild perifollicular multifocal hemorrhage. On the second ovary, there were ovarian follicles and the remnant uterine horn presented discrete multifocal cystic endometrial hyperplasia.

Figure 1. Intra-operative view of laparoscopic resection of ovarian remnants in a bitch. (A) The left ovary (Lo) is grasped and raised using a grasping forceps, reviewing the left pedicle (Lp) and the left kidney. (B) The Roeder’s knot is applied using a knot pusher (arrow) for prophylactic hemostasis of the left ovarian pedicle. (C) The left ovary is grasped following resection. (D) The right ovary (Ro) is found in situ, caudal to the right kidney (Rk) and lateral to the duodenum (Du) along with a segment of dilated right uterine horn (Ru). (E) The ovarian bursa is grasped and raised using a grasping forceps. (F) The Roeder’s knot (arrow) is applied on the pedicle for prophylactic hemostasis before excision of the ovary and uterine remnants.
DISCUSSION

Several studies reveal that ORS is more common following elective rather than therapeutic OVH. Moreover, ORS was more frequent in queens than in bitches. The treatment of choice is surgical removal of the remnant tissue, especially due to the risk of development of neoplastic disease. The occurrence of ORS, as observed in the current case report, can be attributed to improper surgical technique during elective OVH. In our case, there was incomplete removal of both ovaries and incomplete resection of the right uterine horn. The free ovarian tissue within the abdominal cavity may gain neovascularization from the mesovarium, mesometrium, mesentery or omentum and become functional [3].

During laparoscopy, it was seen that the right ovary was intact, without rupture of the suspensory ligament and the presence of a segment of the right uterine horn. In these cases, the remnant tissue is most frequently found on the right side, fairly probably due its deep and cranial anatomical topography. Such condition could lead to poor exposition/viewing of the right pedicle and ovary [5].

In face of the advantages associated to the laparoscopic access, we opted for a two-port approach. In this special case, regarding a patient bearing paraplegia and consequent fecal and urinary incontinence, we chose the endosurgical approach due to the reduced incision length, which could have resulted in decreased risk of wound fecal and urine contamination or infection [4]. Furthermore, such technique was secure and effective for both diagnosis and treatment of ORS in this patient.

In the current report, surgery was carried out in 115 min and the only complication found was a mild leakage of purulent content within the abdominal cavity due to adhesions involving the right pancreatic lobe and the ovarian pedicle, which was successfully managed using absorbent gauze pads and thorough local rinsing. There were no clinical and laboratorial evidences of systemic inflammatory response or infection following 10 days of surgery. Nonetheless, in a non-complicated case, ORS was successfully managed in a cat in 60 min [2].

In conclusion, the two-portal laparoscopic approach is effective for the surgical management of ovarian remnants associated to stump piometra in the bitch.

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REFERENCES