

Surgical therapy of complicated uterine stump pyometra in five bitches: a case report

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ABSTRACT: One of the severe complications of ovariohysterectomy is the incomplete removal of one or two ovaries, which is also known as ovarian remnant syndrome. This condition is usually followed by uterine stump pyometra, which can be described as the infection of uterine body tissue remaining after the operation. However, both conditions may also be encountered separately. In this study, the clinical findings, therapies and long term postoperative conditions of five ovarioectomized bitches with uterine stump pyometra that were brought to the clinic with symptoms like lethargy, loss of appetite, purulent or sero-sanguinous vaginal discharge, polydipsia, polyuria within a four year period, were presented.

Keywords: canine; ovariohysterectomy; complications; stump pyometra

Ovariohysterectomy has been described as a surgical method of contraception in carnivores. Stump pyometra is the infection and luminal purulent distention of the uterine tissue remaining from the incomplete removal of ovaries and/or uterine tissues in ovariohysterectomy operations (Johnston et al., 2001). Okkens et al. (1981) have reported various complications of ovariohysterectomy in 109 cases as incomplete removal of the ovaries, reactions of surgical suture material, flank fistules and intraabdominal adhesions affecting the functions of other organs, while stump pyometra was found in 20% of the cases, either alone or along with the other complications. In the above and in another clinical report (Pearson, 1973; Okkens et al., 1981) it was observed that 58% ($n = 19$) and 71% ($n = 7$) of uterine stump pyometra cases there is also functional ovarian tissue present. This is considered as important evidence of hormonal influence, especially progesterone secretion which is essential in the formation of stump pyometra (Nelson et Feldman, 1986; Johnston et al., 2001).

Major clinical symptoms of stump pyometra are similar to that of Pyometra/Cystic Endometrial Hyperplasia, which are like haemorrhagic and/or

purulent vaginal discharge, depression and anorexia while increase in total WBC and total protein levels are often observed. Contrast media in retrograde vaginography reveals arborisation while pyometra like image is generally observed parrallel to the bladder in adominal ultrasonography. Therapy is surgical and consists of the removal of infected tissue and the remaining ovarian tissues (Johnston et al., 2001).

In this study the clinical findings, therapies and long term postoperative conditions of five ovarioectomized bitches with uterine stump pyometra that were brought to the clinic with symptoms like lethargy, loss of appetite, purulent or sero-sanguinous vaginal discharge, polydipsia, polyuria within a four year period, were presented.

MATERIAL AND METHODS

The bitches were brought to the Clinic of Obstetrics and Reproductive Diseases of Faculty of Veterinary Medicine, University of Adnan Menderes, from Aydin city and its province between September 2000 and April 2004. All the bitches were of different breeds and their ages were between 3 and 5.

The bitches were prepared with routine operation procedures, premedicated with atropine (0.044 mg per kg) and anaesthetised with Xylazine (2 mg/kg) and ketamine (10–20 mg/kg) intramuscularly and additional ketamine was administered via intravenous infusion catheter if needed. All of the operations were performed with midline incision. In laparotomy remnants of uterine and ovarian tissues, infected tissues and adhesions were carefully explored and removed by ligation of the blood vessels. The abdominal cavity was guarded with sterile towels from possible contamination of the leaking purulent exudate during extripation. Following the removal of the infected mass, the remaining stump body was closed with Schmieden sutures (chromic gut, USP = 2/0) and an antibiotic solution of penicilin or cephalosporine was administered into the lumen of cervix uteri. Another antibiotic solution was administered into the abdominal cavity before closing with simple continuous sutures (chromic gut, USP = 0). Animals were fed with moist food for at least three days, daily parenteral antibiotics administered and sutures were

removed on the seventh day. No serious postoperative problems were observed in either anaesthetic recovery or wound healing. Opening of skin sutures in one case was healed with administration of local antibiotics and wound healing agents.

RESULTS

All of the bitches were of different breeds and between 3 to 5 years of age. The period between ovariohysterectomy and the application of cases for therapy varied between 1 month to two years. The difference between case no. 2 and the other cases in this respect was remarkable (Table 1). The degree of purulent vaginal discharge which was observed in three of the cases varied between a slight discharge which can hardly be detected by the owner himself but observed clearly by vaginoscopy, to continuous vaginal discharge observable in the ventral commissure of vulva. No vaginal discharge was observed in one of the remaining two cases

Table 1. Anamnesis and clinical findings of the cases

ID	Breed	Age	Symptoms	Therapy	Period after OHE	Present condition
1	Terrier	5	canine TVT diagnosed stump pyometra in USG detected (purulent vaginal discharge evident) TVT cells have been detected in vaginal cytology	the mass removed by laparotomy, treatment of TVT continued	1 year	no discharge, general condition is good
2	Rottweiler	4	stump pyometra in USG detected multifollicular cystic structure on the right ovary vaginal haemorrhagic discharge cornified superficial cells detected in vaginal cytology	the mass removed by laparotomy	1 month	no discharge, general condition is good
3	Poodle	3	stump pyometra in USG detected pmn infiltration detected in vaginal cytology	the mass removed by laparotomy	2 years	no discharge, general condition is good
4	Pitbull	4	stump pyometra in USG detected pmn infiltration detected in vaginal cytology	the mass removed by laparotomy	2 years	no discharge, general condition is good
5	Cross breed	5	stump pyometra in USG detected few number of parabasal and intermediate cells detected in vaginal cytology	the mass was found near right ovary	1 year	no discharge, general condition is good

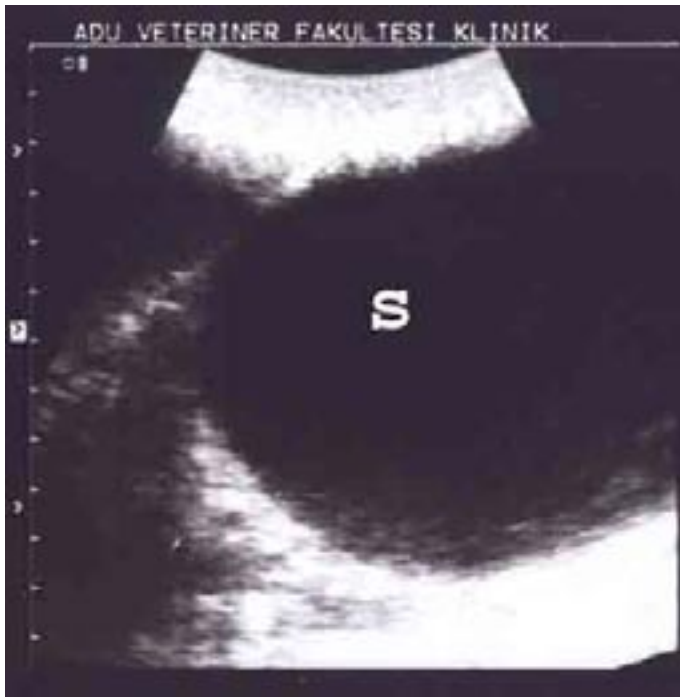


Figure 1. USG image of the mass adjacent to the right ovary in case no. 5

while the other one was brought with a sero-sanguinous vaginal discharge and a tumoral mass in the vestibulum (case no. 1). The examination of the external genitalia and the tumoral mass revealed the typical macroscopic appearance of canine transmissible venereal tumour (CTVT) and detection of the typical CTVT cells with large nuclei in the vaginal cytology have confirmed our diagnosis. Following this, vaginoscopy was performed with

tubular speculum and a purulent cervical discharge was observed. Finally with ultrasonography a definitive stump pyometra image was obtained.

In this case, chemotherapy with an intravenous infusion of vincristine sulphate with a weekly dose of 0.025 mg/kg was initiated. Fourteen days after the chemotherapy had commenced, laparotomy was performed in order to remove the mass which had been detected by ultrasonography. The

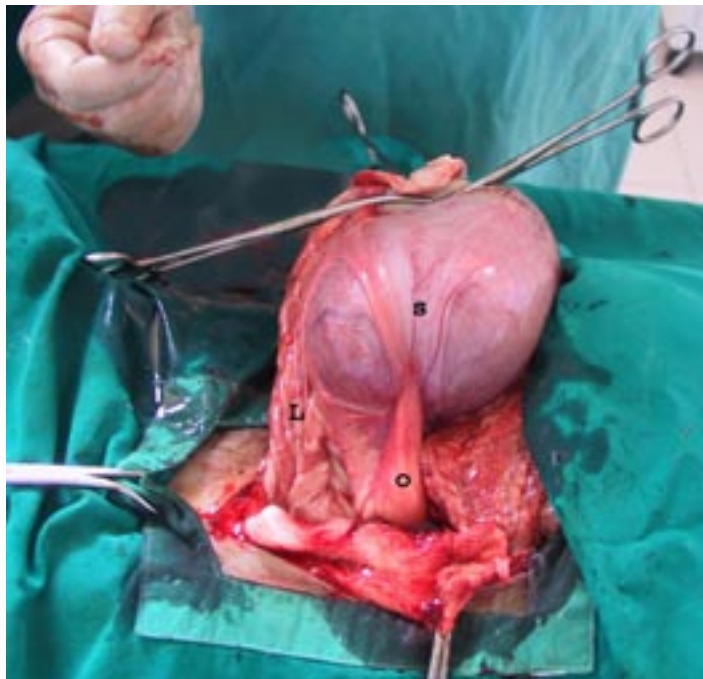


Figure 2. The exteriorisation of the right ovary and ipsilateral uterine horn filled with purulent exudate in case no. 5

s – uterine stump pyometra, o – ovary, L – remaining part of the uterine broad ligament



Figure 3. USG image of uterine stump pyometra in case no. 2

infected uterine mass with a diameter of 5–6 cm by the uterine body and the remains of the right ovary were extirpated. Intraoperative and postoperative periods were completed without any complications and the full regression of venereal tumour was achieved by carrying out several chemotherapy sessions following the operation.

In the laparotomy of case no. 5, there where no vaginal discharge were seen, it was observed that the complete right ovary and ipsilateral uterine horn were partially left behind, and inside this part pyometra had progressed. The mass was spherical, its surface was smooth and its diameter was about 10 cm. It was taken out from the incision, ligated and removed completely with the right ovary adjacent to it. Other possible remaining structures were searched near the cervical stump and none were found, thus the abdominal incision was closed following the infusions of local antibiotic solutions. Routine postoperative care were carried out (Figure 1 and 2).

In cases 2, 3, and 4 the findings were specific to regular stump pyometra. The masses observed in the USG were on or near to the uterine body and in all of the cases ovaries remained either on one side or both sides, partially or completely. All of the remaining structures were removed carefully.

Apart from the other cases in case no. 2 a multifollicular cystic structure was observed. Another difference of this case from the others was that the

ovariohysterectomy had been performed within a short term, such as one month (Figure 3)

DISCUSSION

The purpose of removing the ovaries is not only a method of contraception, but also a preventive technique used to cease the physical and behavioural differences observed in bitches which are in the estrous period. Two of these physical disturbances are the attractiveness of the bitch for the male dog, and sero-sanguinous vaginal discharge. In less preferred methods like tubal ligation, the bitch continues to show signs of estrus, may also copulate, but no conception occurs (Johnston et al., 2001).

Ovariohysterectomy is the most widely used method for sterilisation (Concannon et al., 1991). In two different clinical reports the intra and postoperative complications of ovariohysterectomy have been observed as 7.3% and 27.4%. The authors have stated that no correlations between the occurrence of complications and the age of the animal, experience of the surgeon or disorders and diseases either of the urogenital tract or some other site have been observed, while no specific predisposition of a breed was present, however in smaller size breeds the frequency of complications were more often than middle size and larger size breeds (Johnston et al., 2001).

In most of the cases, stump pyometra develops secondary to ovarian remnant syndrome (Fitts, 1956; Dillon et Henderson, 1981; Okkens et al, 1981). In all of the five cases in this report, ovarian retention in one or both sides were observed. In case no. 5, pyometra developed due to the remaining right ovary and a large part of the right uterine horn, was found interesting as the mass had no connection with the uterine body and therefore the cervix uteri. No similar cases have been reported previously. The source of the infection may carry importance in this case, but the operation was carried out in a different region and thus the retrospective data is missing. Our opinion about the source of infection in this case is that the contamination had occurred before or during ovariohysterectomy, and it proceeded in the following one year period until it presented clinical signs.

Following ovariohysterectomy, complications such as over-appetite and obesity have often been encountered and sometimes veterinary surgeons advise the owner of the animal to leave at least one of the ovaries intact. In other cases the sutures of the ovarian pedicle are put too close to the ovary and so the functional tissue is partially left and this causes the animals cycle (Concannon et al., 1991). The ovarian remnant syndrome is the key factor in triggering the occurrence of uterine stump pyometra via the hormonal influence. Another risk is introducing venereal diseases such as canine transmissible venereal tumour like case no. 1 in this study, as the owner is no more concerned in the mating of the animal following ovariohysterectomy. In case no. 2 the cystic structure detected in the right ovary caused vaginal haemorrhagic discharge and cornified superficial cells were observed in the vaginal cytology. In this case vaginal discharge have ceased following the removal of the observed structures. It is concluded that the aforementioned cystic structure may have been developed before the ovariohysterectomy.

Ovariohysterectomy is considered to be the most reliable method in the control of reproduction in carnivores. The objective of this operation is not only sterilisation, but also prevention of venereal diseases such as CTVT, by cessation of cyclical activity. The unwanted side effects of ovariohysterectomy like obesity can be prevented with a suitable diet. The performance of the operation with the right procedures, detection of the incision line properly and appropriate positioning of the sutures are essential in preventing stump pyometra.

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