



CASE REPORT

Gynaecological Complications Following Improper Ovariohysterectomy in a Dog

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ABSTRACT

The aim of this case report was to describe the gynaecological complications that were related to improper ovariohysterectomy in a dog. Another aim of this report was to highlight the necessity of careful and proper surgical technique to the clinicians. Ovariohysterectomy is an irreversible technique which is used routinely in female animals. In present case a 5 years old Golden Retriever dog that was presented to our clinic with the complaint of enlargement of the abdomen and bloody vaginal discharge was described. The bitch had been spayed previously in a private clinic in 2006. After this surgery the bitch continued to exhibit signs of estrus and mated several times. Radiography and ultrasonography revealed two large fluid accumulation likely due to the fact that of remnant uterine horns. It was decided to operate on the bitch. During the surgery it was detected that only the bifurcation of the uterus was excised at the first surgery which had been performed in the private clinic. After this operation histopathologically, two ovaries with luteal cysts, two remnant uterine horns, and enlarged cervix were recorded. In both of the uterine horns and in the cervix; cystic endometrial hyperplasia was detected. After the surgery the bitch was presented to our clinic again for control and was observed to be clinically normal. In conclusion, possible consequences of improper ovariohysterectomy in female dogs are discussed in this case report.

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INTRODUCTION

Ovariohysterectomy is an irreversible technique which is used for the sterilization of the female animals. Because of this technique there may occur so many complications related to the operation such as; haemorrhage, delayed wound healing, suture problems like abscesses or infections. Apart from these, there may be some complications caused iatrogenically. Ovarian remnant syndrome (ORS) can be defined as the complication of ovariohysterectomy (OVH) caused by inability of removing some or all of the functional ovarian tissue during the operation (Wallace 1991; Ball *et al.*, 2010). The reasons of this syndrome can be defined as; improper placement of ligatures, poor visualization of the operation side, can not reach to the ovarian tissue during surgery, or revascularized piece of ovarian tissue dropped into the abdomen during surgery (Wallace 1991). The

clinical symptoms occur in a long term after operation and the dog or the queen exhibit signs of proestrus or estrus of vulvar swelling, bloody discharge from the vulva in dogs and vocalization, lordosis in cats (Ball *et al.*, 2010; Sangster 2005). Some of the animals let copulation without pregnancy at the end (Wallace 1991). Ball *et al.* (2010) reported additional symptoms for ORS as mammary gland enlargement, or masses; stranguria; alopecia and hyperpigmentation of skin; vulvar or vaginal masses; vaginal mucosal enlargement; polyuria and polydipsia; polyphagia; urinary tract infections. Diagnosis of the ORS can be detected by; ultrasonography, vaginal cytology, hormonal assays consist of estrogen-estradiol, progesterone, LH assays and ACTH stimulation test and exploratory laparotomy with biopsy (Wallace 1991; Ball *et al.*, 2010; Sangster 2005).

This case report highlights the possible consequences of improper ovariohysterectomy in female dogs and

describes the necessity of careful and convenient surgical technique to the clinicians.

CASE PRESENTATION

A 10-year old Golden Retriever bitch presented to Department of Obstetrics and Gynaecology clinic with the complaint of abdominal enlargement at the last 3-5 days and bloody vaginal discharge for 3 days. The bitch was spayed at 2006 in a private clinic but till then the bitch continued to exhibit signs of estrus intermittently and was used to mate. Complete blood cell count and biochemistry were performed to the dog (Table 1). At the vaginal cytology diestrus phase was detected. The abdominal radiography revealed two large masses and abdominal ultrasonography revealed ascites; two very large fluid accumulations; and a mass observed close to the urinary bladder. One of the fluid accumulations was detected homogenous, the other had hyperechoic floating debris in it. These fluid accumulations thought to be related with the remnant uterine horns. Additionally, right ovary was diagnosed by ultrasonography. It was decided to operate on the bitch. For induction of the anesthesia propofol (Pofol ampul®, Dongkook Pharm, Korea) at 6mg/kg dose iv and 3-4 % isoflurane (Foran liquid®, Abbott Laboratories, England) and oxygen combination was used to maintain the general anesthesia. Median line was preferred for the operation. When the abdominal cavity was opened large amount of ascites in the abdomen observed and aspirated. During the surgery it was detected that only the bifurcation of the uterus was excised at the first surgery which had been performed at the private clinic. The right, left uterine horns, cervix and both of the ovaries were still present. The ovaries were resected firstly. Macroscopically several cysts were visualized on the surface of the ovaries (Figure 1A). In right uterine horn approximately 1,75 liter bloody fluid accumulation detected and aspirated so that the mass can be exteriorized easily from the abdomen and this mass was excised after ligation (Figure 1B). The left uterine horn which consisted of serous fluid easily ligated and then dissected (Figure 1C). The cervical region was firstly ligated and then excised (Figure 1D). Subsequently, abdominal cavity gently flushed with warm physiologic saline solution and aspirated so many times, at the end metronidazole (Flagyl serum®) poured to abdominal cavity and the abdominal muscles were sutured with absorbable suture material and the incision site was closed as routinely. For postoperative period metronidazole (Flagyl serum®) at a 25 mg/kg dose iv for 3 days and ceftriaxone sodium (Novocef flc.®) im at a 20mg/kg dose for a week, and vitamin B and C complex (Hepargrizeovin amp.®), 1 mg/kg im Ranitidin (Ulcuran amp.®), 2.2 mg/kg Carprofen (Rimadyl tablet®) were administered to the dog. An Elizabethan collar was placed in order to prevent the dog from accessing the sutures. One week later the dog presented to our clinic again for control and blood sample was collected and evaluated, all the haematologic parameters were below the reference value and mild leukocytosis was present so it was recommended to continue to the prescription and B₁₂ vitamin (dodex ampul®) was added for a week to this prescription (Table 1). The urination, defecation and appetite of the dog were

Table 1: The result of haematological parameters before the operation and postoperatively at the control

Test	Before Operation	At the Control	Reference Range
RBC (x10 ⁶ µl)	6,14	4.13	5,5-8,5
HGB (g/dl)	13,1	8.9	12-18
HCT (%)	41	28	37-55
WBC (x10 ³)	14,9	20.8	6-17
PLT (x10 ³ µl)	267	820	200-500
MCV	67	67	60-77
MCH (pg)	21	22	19,5-26
MCHC (%)	32	32	32-36
Glucose (mg/dl)	114	87	60-125
BUN (mg/dl)	25	18	7-27
Creatinine (mg/dl)	0,7	0.4	0,4-1,8
AST (IU/L)	43	25	5-55
ALT (IU/L)	35	42	5-60
ALP (IU/L)	273	165	10-150
Ca (mg/dl)	8,4	9.2	7,5-11,3

recorded all normal. At the physical and operation site examination no abnormality was detected. The skin sutures were removed in ten days after the operation.

After the operation, right uterine horn's diameter was measured as 7.2x16.5 cm, left uterine horn's diameter was measured as 9,5x15,8 cm. The tissue samples were sent to pathology department for histopathological evaluation. The tissue samples were fixed in 10% buffered formalin, embedded in paraffin wax and sectioned at 2-3µm, stained with hematoxylin and eosin (HE) for histopathological evaluations. At the histopathological evaluation luteal cysts were detected in the ovaries (Figure 2) and two uterine horns were detected. In the right uterine horn bloody fluid accumulation, hematometra (Figure 3), and dark red staining areas, necrotic variations in the tissue observed histopathologically, in the other uterine horn serous fluid accumulation, hydrometra was detected (Figure 4). Necrotic lesions and haemorrhage were detected on the surface of the right ovary, too. A ligature was found in the omentum. When uterine horns were evaluated cystic degenerations were detected histopathologically. Cervix uteri detected as 4-5 cm diameter and there were large cysts at the surface of its mucosa.

DISCUSSION

The treatment of ovarian remnant syndrome is to remove the remnant piece of ovarian tissue with an additional surgery, however it can be difficult to find the remnant piece in the abdomen (Wallace 1991; Pearson 1973; Perkins and Frazer 1995; Howe 2006), in this case the dog had to be experienced a second surgery to remove the remnant ovaries, uterine horns and cervical piece.

Mantziaras *et al.* (2008) reported uterine horn remnant in a cat that had been previously spayed at a private clinic. This author reported under continuous ovarian activity the accumulation of sterile fluid (mucometra) can be developed due to blind ended-uterine horn unable to drain the fluid. Cystic endometrial hyperplasia may lead to hydrometra and mucometra or these conditions can occur because of an obstruction of the lumen of the uterus, cervix or vagina (Kennedy and Miller 1991; Marcella *et al.*, 1985). The difference between these two conditions is the degree of hydration of

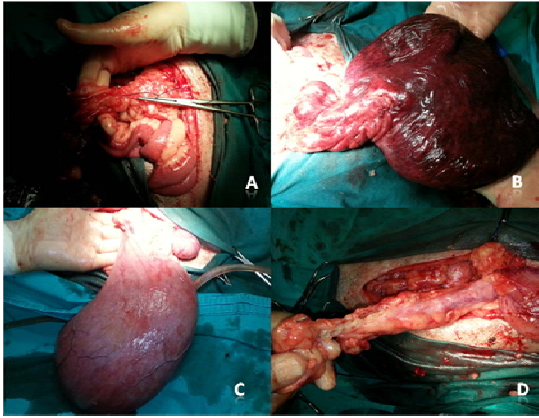


Fig. 1: Right ovary and ligation of the ovary (A), Right uterine horn filled with bloody fluid (B), Left uterine horn filled with fluid (C), Cervical region of the bitch during surgery (D).

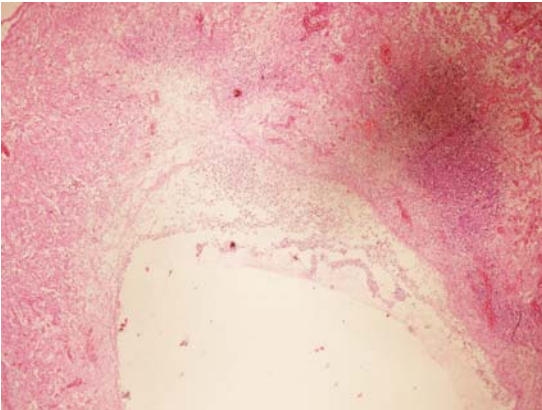


Fig. 2: Luteal cyst, ovary, H&E, 40x

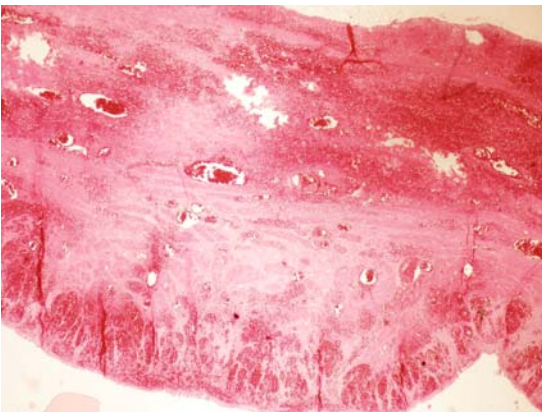


Fig. 3: Severe hemorrhage and hyperemia in all layers of the uterus, hematometra, H&E, 40x

the mucin (Kennedy and Miller 1991). Cystic endometrial hyperplasia is the reason for hydrometra, mucometra and hematometra and the character of the accumulated fluid is all sterile and they are serous, seromucous and bloody, respectively (De Bosschere *et al.*, 2001). Oh *et al.* (2005) reported hydrometra that has been developed by the obstruction due to segmental aplasia of the uterine body in their case report about segmental aplasia of uterine body in an adult mixed breed dog. In present case hydrometra

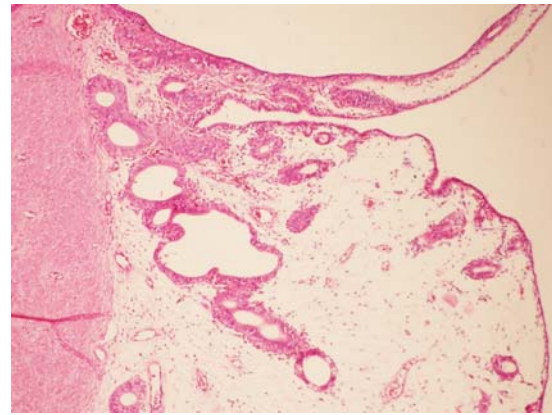


Fig. 4: Severe edema in the endometrium, cystic degenerations in the glands, hydrometra H&E, 100x

and hematometra may be occurred iatrogenically but the reason is same; the inability of draining the fluid, in this case the failure associated with the drainage of the fluid is due to the ligatures between cervix and uterine horns.

Cystic endometrial hyperplasia (CEH) can predispose the bitch to develop pyometra (Dow 1958, Sandholm *et al.*, 1975). Complications of the ovarian remnant syndrome reported previously as granulosa cell tumors, uterine stump pyometra, mammary tumours (Wallace 1991; Sivacolundhu *et al.*, 2001). In the present report CEH at the remnant uterine horns and cervical region was detected. Repeated progestational stimulation during the luteal phase of the estrous cycle can lead to cystic endometrial hyperplasia (Dow 1958). In this report according to the presence of the luteal cysts on the ovaries thought to have been lead to CEH.

As ovarian remnant syndrome is known to be an iatrogenic condition as it can lead so many various gynaecologic complications reported previously, and as this case reports the same situations and having large amount of fluid accumulation that can entail possible harmful effects on the dog's general condition, this case found to be valuable for to be discussed.

In conclusion, gynaecological complications that may be associated with improper ovariohysterectomy in a dog were discussed in this case report and this report highlights the necessity of careful and convenient surgical technique to the clinicians.

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