

A Case Report on Pyometra in a German Shepherd Dog



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Table of contents

Abstract.....	iii
1 Introduction.....	1
2 Case presentation.....	2
2.1 Case history and description.....	3
2.2 Treatment.....	3
2.2.1 Premedication & anesthetics.....	3
2.2.2 Suture material.....	3
2.2.3 Surgical procedure.....	4-5
2.2.4 Post operative care & management.....	6
2.2.5 Follow up result.....	6
3 Results and discussion.....	7-9
4 Conclusion.....	10
References.....	11-12
Acknowledgement.....	13
Biography.....	14

List of Figures

Title	Page
Figure 1..... Purulent vaginal discharge.....	2
Figure 2..... Ultrasound scan of abdomen.....	2
Figure 3-5.....Premedication and anesthetics agent.....	3
Figure 6..... Suture materials.....	3
Figure 7-14.....Surgical procedure.....	4-5
Figure 15.....After recovery.....	6

Abstract

During my internship placement, a 5-year-old German Shepherd bitch was admitted at Teaching and Training Pet Hospital and Research Center, CVASU, Dhaka. The bitch was discovered to be restless and to have a history of purulent vaginal discharge. She also was frequently licking her body in the perianal area. Pyometra was hypothesized based on the patient's medical history and clinical symptoms; ultrasonography confirmed the diagnosis. Under general anesthesia, an ovario-hysterectomy was advised in order to preserve the bitch's life. After the procedure, a broad-spectrum antibiotic, an anti-inflammatory medication, and an antihistaminic medication were prescribed. The fundamental phases of an ovario-hysterectomy were successfully completed. Following the procedure, the owner of the bitch was contacted on a regular basis over phone, and a week after the operation, the patient had fully recovered clinically. In conclusion, ovario-hysterectomy is a successful treatment for pyometra in a bitch, and Ultrasonography can be used to confirm the diagnosis.

Keywords: *Pyometra, Purulent vaginal discharge, Ovariohysterectomy, Ultrasonography.*

Chapter 1

Introduction

Pyometra is a common clinical disorder characterized by uterine enlargement and pus formation in the uterine lumen. This degenerative syndrome affects middle-aged to older age female canines, with ages ranging from 6.4 to 9.5 years at clinical presentation (Gibson et al., 2013). According to Jitpean et al. (2012), the condition affects approximately 19% of all female canines under the age of ten. Pyometra occurs as a result of hormonal changes in the uterus. Estrogen promotes progesterone's stimulatory effects in the uterus via the progesterone receptor. As a result, estrogen supplementation dramatically raises the risk of pyometra. After estrus, there is a constant rise in progesterone, which induces uterine wall thickening and may lead to cystic endometrial hyperplasia. Following that, because of the favorable environment for bacterial growth, the condition can evolve to pyometra (Feldman and Nelson, 2004). *Escherichia coli* is most usually found in pyometra (Hagman and Greko., 2005) because it is a natural commensal of vaginal microbiota and can cause ascending infection to the uterus under favorable conditions.

Pyometra in female dogs has a complex pathology that is influenced by a number of variables, such as immunoglobulin content, uterine motility, neutrophil activity, and bacterial infection (Schlafer and Foster, 2016). For bitches, ultrasonographic examination is an efficient method for diagnosing uterine lesions. This method enables assessment of cysts or luminal distention, measuring of the uterine wall, and evaluation of uterine integrity (Bigliardi, 2004). Surgical ovariohysterectomy is still regarded the safest and most successful treatment since the source of infection is removed and recurrence is avoided, although medication treatments are also available (Fieni et al 2014). This clinical report describes a pyometra case which occurred on a bitch during my internship placement rotation.

Chapter 2

Case Presentation

2.1 Case history and description

A Five-year-old, a German Shepherd dog with a body weight of 17.5 kg, was brought to the Teaching and Training Pet Hospital and Research Center, CVASU, Dhaka, Bangladesh. She had a history of anorexia, dullness, and purulent vaginal discharge (Figure 1), as well as frequent vaginal licking and restlessness. Though physical health of the bitch had deteriorated, it appeared to be very normal. Several black areas throughout the uterus were visible on ultrasonography. It was also observed that the uterus contained liquid material. The bitch was diagnosed with pyometra based on these two ultrasound results. The ultrasound image obtained from the bitch's uterus is shown in Figure 2.



Fig1. Rear side of the bitch diagnosed pyometra showing purulent discharge from the vagina.



Fig 2. Ultrasonography image of uterus of the bitch diagnosed pyometra.

2.2 Treatment

The case was corrected by ovario-hysterectomy according to standard procedure.

2.2.1 Premedication & anesthetics

Xylazine hydrochloride (Xylazine, Indian Immunological Ltd, India, 1 mg/kg body weight) was intramuscularly administered as premedication. For induction and maintenance combination of diazepam (Sedil, Square Pharmaceuticals Ltd, Bangladesh, 0.5 mg/ kg body weight) and ketamine hydrochloride (Ketalar, Popular Pharmaceuticals Ltd, Bangladesh, 5 mg/kg body weight) was intravenously used.



Fig 3: Xylazine hydrochloride



Fig 4: Diazepam



Fig 5: Ketamine hydrochloride

2.2.2 Suture material

Both absorbable and non-absorbable suture materials were employed throughout the procedure. Vicryl (Vicryl,2-0, Ethicon, Johnson and Johnson Ltd, India) was utilized as an absorbable suture material to seal the muscle layer and subcutaneous fascia. Silk was used as a non-absorbable suture material to seal skin for a greater strength.



Fig 6: Suture materials (Vicryl and Silk)

2.2.3 Surgical procedure

The dog was placed on a surgical table and kept in dorsal recumbency following general anesthesia. 6-8 cm long was incised that started over the umbilicus and extended caudally was performed. Using a surgical knife, incisions were made in skin, subcutaneous tissue, linea alba and peritoneum. After that, a finger was inserted into the incision to detect the ovary and uterus. By applying traction, the ovary's suspensory ligament was torn, and it was removed from the abdominal cavity. A double ligature with vicryl (Vicryl , 2-0, Ethicon, Johnson and Johnson Ltd, India) was made in the ovarian blood vessel and attachment between the ligature and ovary was then severed. Before reattaching the amputated piece to the abdomen, it was thoroughly examined for signs of hemorrhage. The other ovary was discovered and removed similarly after the first one had been removed. The uterus body was then taken out of the abdomen and tied off with vicryl. Just cranial to the ligature, the uterus was separated, and it was thoroughly examined for bleeding before being returned to the patient. Simple continuous sutures with vicryl were used to close the muscle layer and horizontal mattress sutures made of silk were to close the skin layer. Throughout the surgery, 500 ml of 50% dextrose saline was intravenously administered.



Figure 7 : Preparation Of surgical site

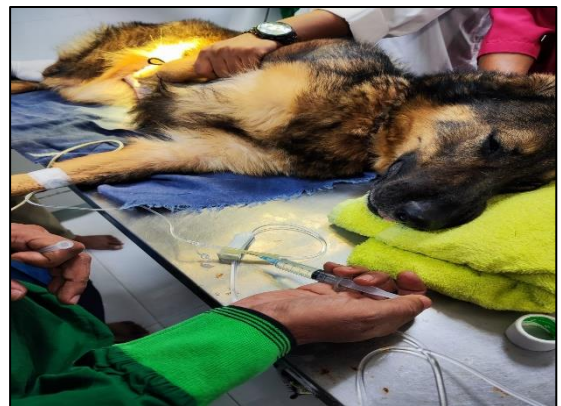


Figure 8 : Induction Of general anesthesia



Figure 9 : Skin incision

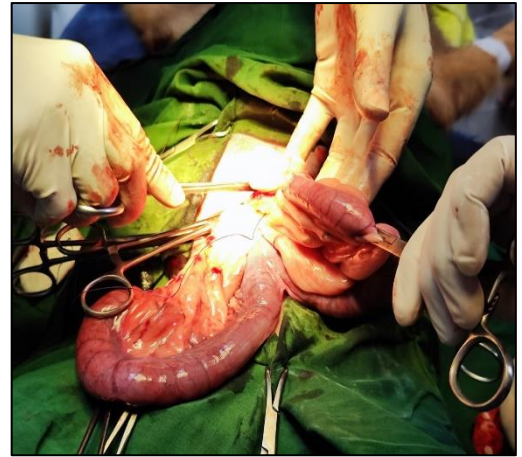


Figure 10 : Excision of uterus and ovaries



Figure 11 : Excised uterus and ovaries



Figure 12 : Muscle suture

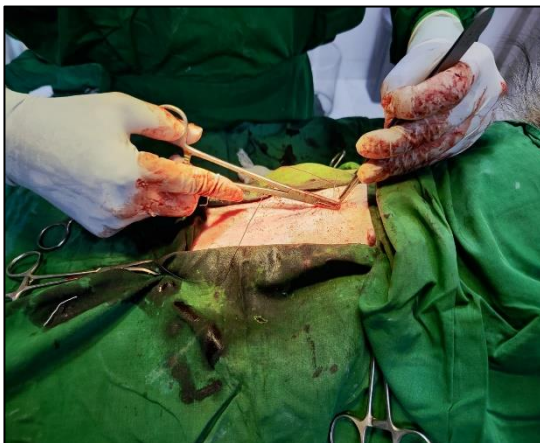


Figure 13 : Skin suture



Figure 14 : After surgery

2.2.4 Post operative care & management

- The bitch was kept in a clean and dry place after the operation.
- An Elizabethan collar was put on for avoiding licking.
- Ceftriaxone (Trizone Vet, 500 mg, ACME, Pharmaceuticals Ltd, Bangladesh, 30 mg/kg body weight) and meloxicam (Melvet, 10 ml vial, TECHNO, Pharmaceuticals Ltd, Bangladesh, 0.2 mg/kg body weight) were given intramuscularly for 7 days as postoperative care and subcutaneously for 3 days, respectively as post operative care.
- Dressing with povidone iodine (Betadine 5%, Mundipharma, Bangladesh) was done to the lesion for next 7 days.
- The dog was instructed to limit exercise and stay inside for 12 days following surgery to ensure full recovery. The 14th postoperative day saw the removal of the skin suture was done. Both anesthesia recovery and wound healing showed no surgical problems. After the procedure, the dog's physical condition of the biter significantly improved and all clinical signs of illness were disappeared.

2.2.5 Follow-up result

The bitch was fully recovered after 7 days post operation.



Fig 15 : After recovery within 7 days

Chapter 3

Results and Discussion

Pyometra is defined as an intrauterine accumulation of pus accumulation by a persistent corpus luteum and failure of estrus. The primary clinical symptom in this instance was the patients open cervix pyometra, which allowed for the drainage of a sanguinopurulent vaginal discharge. Uterine horns were discovered to be large and floppy upon gross examination. Purulent fluid emerged from both uterine horns after a knife incision was made over them to examine the voluminous area. The buildup of fluid could be the result of opportunistic bacteria from the vaginal microflora, particularly *Streptococcus sp.* and *Escherichia coli*, invading the uterus. The endometrial wall had irregularities, corrugations, and thickening. Bacterial proliferation within the uterine lumen leads to the development of pyometra and is caused by decreased myometrial contraction, hyperplasia of the endometrial gland, and suppression of leukocyte response due to excess progesterone (Sugiura et al., 2004).

Estrogen levels stay elevated during the luteal phase, which prolongs the dilation of the cervix. The uterus can become infected with opportunistic microorganisms due to this dilated cervix. Excess estradiol causes the endometrium and endometrial glands to proliferate excessively, which increases the stimulatory action of progesterone and increases the release of uterine glands. Additionally, too much progesterone lowers the female reproductive tract's local cellular immunity. According to Gyan et al. (2020), opportunistic bacteria of the normal vaginal microflora can ascend into the uterus due to a combination of favorable uterine conditions and weakened local immunity. This leads to bacterial proliferation within the uterine lumen. Smith (2006) discovered that in canine species, uterine injection with *Escherichia coli* between days 11 and 20 following the peak of luteinizing hormone can result in pyometra because the uterus is still very vulnerable to infection by this point. Subacute endometritis followed by cystic ovarian hyperplasia can also result in pyometra. Pyometra can be treated medically (ovariectomy or hysterectomy) or hormonally (prostaglandin). The most effective option for treating pyometra is ovariectomy because prostaglandin therapy produces a number of negative side effects, ranging from a mild allergy to anaphylactic shock (Mahesh et al., 2014). Ovario-hysterectomy is more complex and

carries a higher risk of infection than normal spaying because of the ongoing infection within the uterus. During surgery, appropriate precautions should be taken to stop the spread of uterine contamination. The bitch should be catheterized with a Foley catheter, and the uterine discharge should be appropriately drained out if it is going to be used for additional breeding. After that, a broad-spectrum antibiotic and 20–30 ml of normal saline should be used to wash the uterus. On the following cycle, the bitch should mate after receiving antibiotic therapy. Pyometra recurrence is prevalent in bitches receiving medication; thus, following mating, the bitch should be closely watched for any indications of pyometra recurrence. Since it is normal for bitches receiving medication to relapse with pyometra, the bitch should be spayed as soon as its reproductive career is over (Baithalu et al., 2010). Due to a accumulation of pus inside the uterus, both uterine horns were seen to be voluminous and floppy in this investigation, suggesting pyometra. Ovario-hysterectomy was deemed the appropriate course of action in this case following careful observation of the patient's condition, and it was carried out effectively with no complications during or after surgery. Both Gyan et al. (2020) and Malik et al. (2015) reported that ovario-hysterectomy was the most effective approach for successfully repairing canine pyometra. The technique followed the conventional ovario-hysterectomy protocol as outlined by Djemail B. et al. (2010),the incision was made midway across the umbilicus, and both the uterine body and ovaries were removed entirely following ligation. Then, since simple continuous suturing is relatively quick and easy and reduces the danger of peritoneal infection, the incision was closed with it. The same surgical technique, suture pattern, and suture materials were used by Malik et al. (2015) and Gyan et al. (2020), whereas Biswas et al. (2012) closed the muscle layer using catgut (Mersutures, 2-0, Ethicon, Johnson & Johnson Ltd., India) rather than vicryl because the latter is more costly than the former. Catguts are more irritable due to a larger degree of tissue reactivity surrounding the tissue caused by foreign proteins in nature. Because of this, it is advised to utilize vicryl whenever possible in place of catgut (Hanna, 2022). As a postoperative measure to avoid subsequent bacterial infection, ceftriaxone (500 mg, Trizon Vet, ACME, Pharmaceuticals Ltd., Bangladesh, 30 mg/kg body weight) was injected intramuscularly for seven days. This antibiotic has bactericidal properties and is recommended to stop Following the procedure, meloxicam (Melvet, 10 ml vial, ACME, Pharmaceuticals Ltd., Bangladesh, 0.2 mg/kg body weight) was given subcutaneously for three days as a pain reliever. A non-steroidal anti-inflammatory medication called meloxicam inhibits the cyclooxygenase enzyme to stop the production of prostaglandins, which is a mediator of inflammation. This medication is frequently used as a postoperative pain reliever because it is suggested for fever, discomfort,

and inflammation. In order to stop bacteria from getting into the wound and speed up the healing process, povidone iodine was administered as an antiseptic. In their studies on the management of pyometra in dogs, Biswas et al. (2012), Malik et al. (2015), and Gyan et al. (2020) all employed the same postoperative treatment. In order to prevent subsequent bacterial infection, Katherine (2017) prescribed amoxicillin/clavulanate potassium (Aventiclav 125mg, Aventix, Burlington, Ontario, 12.5 mg/kg body weight) as a postoperative antibiotic. The surgical procedure and postoperative treatment are advised for the repair of pyometra in dogs since the patient recovered amazingly from the treatment and had no postoperative problems.

Chapter 4

Conclusion

If the bitch with pyometra had not received prompt and appropriate medical attention, it might have died. It was treated with an ovariohysterectomy, and the outcome indicated that, with the help of a good anti-inflammatory, an antihistaminic, and an excellent antibiotic, it recovered completely from the procedure within one week. Consequently, ovariohysterectomy is an effective treatment for pyometra in a bitch .

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Biography

I am Durlove kante das, son of Dulal kante das and Kunjamayi das .I have passed my S.S.C from Bakolia govt. high school ,Chattogram in 2014 (G.P.A 5) and H.S.C from Hazera-Taju Degree College, Chattogram in 2016(G.P.A 5). Now I am an intern veterinarian under the Faculty of Veterinary Medicine in Chattogram Veterinary and Animal Sciences University.