



## Enterologic and Gynaecologic Complications of Ovariohysterectomy in the Bitch.

AKINRINMADE, J.F. and EYAREFE, O.D.

Department of Veterinary Surgery and Reproduction, Faculty of Veterinary Medicine, University of Ibadan. Corresponding Author: [fadeyemiakinrinmade@yahoo.com](mailto:fadeyemiakinrinmade@yahoo.com)

### SUMMARY

The enterologic and gynaecologic associated complications post ovariohysterectomy (OVH) in bitches were evaluated. Medical records of 53 bitches with mean body weight of 15.2kg presented at the Veterinary Teaching Hospital (VTH), University of Ibadan between 1990-2010 were reviewed.

Enterologic complications after OVH were observed in 11 (20.7%) of the cases studied. These include: Chronic vomiting 9 (81.8%), weight loss 9 (81.8%), anorexia, 8 (72.7%), diarrhea, 6 (54.5%) and pyrexia, 5(54.5%). Nine of the 11 dogs (81.8%) had extensive intestinal and uterine stump adhesion. Gynaecologic complications observed in 23 (43.3%) of the 53 bitches included vulva discharge 21(91.3%), incomplete extirpation of the ovaries 14(60.8%), recurrent estrus 9(39.1%), pseudopregnancy 8(34.7%), inflammation of the uterine cervical tissue and stump 4(17.4%) and non-resorbable ligature 3(13.0%).

The study shows that enterologic and gynaecologic complications occur following OVH in bitches and strongly advise that bitches with gastrointestinal symptoms following OVH should be suspected of intestinal adhesions and incarcerations.

**Key words:** enterologic, gynaecologic, complications, ovariohysterectomy, bitches.

### INTRODUCTION

The surgical excision of the ovaries and uterus is referred to as ovariohysterectomy (OVH) (Stone *et al.*, 1993). It is indicated for sterilization and treatment of many ovarian and uterine diseases such as ovarian cysts, pyometra, neoplasia and rupture (Stona *et al.*, 1993). OVH is also indicated in the prevention and treatment of recurrent vaginal hyperplasia and hormonal changes that could interfere with medication in animals with diabetes or epilepsy (Stone *et al.*, 1993). It ideal to spay bitches at 6-9 months, however contemporary literature suggest earlier ages (Libebrman, 1987, Aronsohn and Faggella, 1993).

Patients presented for elective OVH can be operated on under a general anaesthesia of the surgeon's choice. However, OVH in the patient with a diseased uterus and other debilitating conditions, will require critical attention to fluid and anaesthetic management. Reports of complications of OVH in bitches are well-documented (Berzon 1979, Okken *et al.*, 1983, Finland 1990, Stone *et al.*, 1993). Most of these complications are similar to those that are normally associated with abdominal procedures, and include: hemorrhage, anaesthetic complications, delayed wound healing, suture abscesses, infection and self –inflicted trauma to the wound (Stone

*et al.*, 1993). Less attention has however, been accorded to other complications of the procedure that tend to manifest much later after the exercise, with grave consequences. The purpose of this study therefore, is to determine the incidence of such complications that are of enterologic and gynaecologic origin and recount the salient features of their aetiopathogenesis. It is hoped that the results from this study would be of benefit to the clinician in the differential diagnosis of non-ovariohysterectomy-related enterologic and gynaecologic conditions in the bitch.

#### **MATERIALS AND METHODS**

Medical records of 53 out of 493 bitches presented at the Veterinary Teaching Hospital, University of Ibadan, between 1990 and 2010 for ovariohysterectomy were reviewed. Cases presenting gastrointestinal symptoms but with a history of OVH and confirmed by surgical exploration were included in the study. Where necessary, some relevant information were obtained from owners. The mean body weight of the 53 dogs was 15.2kg. Presurgical evaluations were conducted in all bitches that underwent OVH, comprising historical facts and physical examinations. Unhealthy animals presented for non-elective OVH received appropriate pre, peri and postoperative care.

##### **Surgical Procedures**

Food was withheld for a minimum of 8 hours prior to surgery. Anaesthesia was achieved by the use of either Atropine-Xylazine-Pentobarbitone (77.3%); Atropine-Xylazine-Thiopentone (5.3%); Atropine-Diazepam-Ketamine (1.8%); Atropine-Xylazine-Thiopentone-Halothane (15.0%) drug combinations.

Five (9.4%) of the bitches received no fluid while others received either of dextrose

saline (1.8%), normal saline (24.5%) and Hartmann's solutions (64.2%) respectively. Post anaesthesia, bitches were aseptically prepared and draped appropriately on dorsal recumbency.

A 6-12cm ventral midline skin incision was made from above the umbilicus and continues caudally to access the abdominal cavity. The uterus was identified and isolated after a dorso-caudal reflection of the urinary bladder through the incision and visualizing the body and uterine horns lying dorsal to the colon and ventral to the trigone of the urinary bladder. The uterus was grasped with fingers or using oophorectomy hook to exteriorize the uterus. One horn of the uterus was followed cranially to identify the ovary on that side, and a hemostat was placed across the proper ligament and the broad ligament were broken down by use of sharp or blunt dissection as necessary for exposure of the ovary and uterine horn. The ovarian pedicles were severed by the 3-forceps method as described by Fingland (1990). Similarly, the uterus was severed and abdominal incision closed routinely using standard procedures (Fingland, 1990).

##### **Postoperative Management**

All bitches were observed for a period of 3-5 days and evaluated for swelling, redness or discharge at surgical sites. Postoperative antibiotics administered intramuscularly for 3-5 days consisted one of the following: 5% Oxytetracycline, Penstreptomycin and Ampicillin. Skin sutures were removed 8-12 days postoperation. All complications arising from the gastrointestinal and genital systems that occurred later than one week after OVH, including those that were confirmed by exploratory laparotomy, were documented. Records of clinical signs and lesion observed on re-operation in some of bitches with complications were

also evaluated. Data obtained were subjected to appropriate descriptive statistics.

## **RESULTS**

During the period under review, 53 of the 493 (10.7%) presented for OVH were diagnosed with various enterologic and gynaecologic complications, 1 to 24 weeks postoperative. Immediate complications, occurring less than 5 days after OVH consisted of redness and swelling of incision (2-5 days postoperation) in 9 (16.9%) of the bitches. Wound dehiscence was observed in 7(13.2%) of the bitches 3-5 days after OVH.

Enterologic complications were observed 1-24 weeks post OVH in 11 (20.7%) of the 53 bitches. Gastroenterologic symptoms and lesions found on re-operation of the bitches are presented in Tables I and II respectively. Chronic vomiting (81.8%), weight loss (81.8%), anorexia (72.7%) diarrhea (54.5%) and pyrexia (45.4%) were the most frequent observed gastroenterologic signs and symptoms in the 11 bitches after OVH (Table I). Intestinal adhesion and incarceration of intestinal loops with the ovarian stump was the most prominent lesions observed in bitches with gastroenterologic complications after OVH. Of the 11 bitches diagnosed with enterologic complications on re-operation, 9 (81.8%) had extensive adhesion between the intestine and ovarian stump. Adhesion between intestinal and gynaecologic structure (ovarian and cervical stumps) were also observed (Table II).

Gynaecological complications observed in 23 (43.3%) bitches after OVH included vulval discharge (91.3%), incomplete extirpation of the ovaries (60.8%), recurrent estrus (39.1%), pseudopregnancy (34.7%), inflammation

of the uterine cervical tissue and stump (17.4%) and non-resorbable ligatures (13.0%) respectively (Table III).

The body weight distribution of the bitches at presentation for OVH is presented in Table IV. Majority of the bitches (92.4%) weighed less than 20kg while only 7.5% weighed above 20kg and could be said to be heavy.

## **DISCUSSION**

Of the 53 bitches with the observed clinical signs and lesion post OVH, enterologic related complications were observed in 11 (20.7%) bitches. The most prominent signs were pyrexia (9 bitches), weight loss (8 bitches) and anorexia (8 bitches). Observed high temperature in 9 out of 11 bitches with enterologic signs may be due to inflammatory process involving gastrointestinal and gynaecologic structures rather than postoperative pyrexia associated with break in aseptic technique, more so when the clinical history revealed that majority of affected bitches had undergone OVH because of other primary conditions such as pyometra, uterine rupture and complicated pelvic fracture.

Enterological lesion observed on re-operation in bitches after OVH included extensive intestinal adhesions (5 bitches), adhesion between intestine, bladder and cervical stump (4 bitches), adhesion between intestine and abdominal wall (3 bitches), presence of abdominal mass (1 bitch) and adhesion between the intestine, colon and cervical stump (4 bitches). However, adhesion between ovarian stump and the intestine was most prominent, accounting for 81.8% of all anatomical abnormalities observed on re-operation. Adhesion formation was most probably attributed to severe peritonitis and inflammatory processes that normally

attend incomplete extirpation of ovarian tissue, the uterine body and /or the cervical stump. None of the bitches with adhesion received antibiotic intraperitoneally during or after OVH. Drug-induced peritonitis was therefore considered less likely to have caused adhesion.

Extensive adhesion between ovarian tissue and abdominal structures had been reported in dogs as complication following OVH (Berzon, 1978, Happe *et al.*, 1989, Fingland, 1990).

Other factors that may have contributed to the observed complications are uterine stump pyometra, uterine stump inflammation and granuloma associated with the use of non-absorbable suture for ligatures and poor aseptic technique (Kassem 1985, Happe *et al.* 1989, stone *et al.*, 1993).

Gynaecological related complications due to remnants of ovarian, uterine and cervical tissues, were observed in 23 bitches (43%) after OVH in this study. This is lower than the 50.4% reported by Okkens *et al.*, (1983) in their study. Complications observed on re-operation included incomplete extirpation of the ovaries (60.8%), inflammation of uterine cervical tissue and stump (69.6%), non-resorbable suture (30.4%), swollen vulva/vulva/ discharge (91.3%), recurrent estrus (47.8%) and pseudopregnancy (34.7%). The occurrence of ovarian remnant as a complication in this study appeared to be more prominent in bitches that are obese and this that weighted 20kg and above. The reason for this may probably be due to more difficult accessibility of the ovaries especially in obese animals. Okken *et al.*, (1983) reported 43% incidence of incomplete extirpation of the ovaries as gynaecological complications after OVH in bitches. This finding is high compared to 26.4% obtained in our study and may not

be unrelated to the relatively lower average body weight of 15.2kg in this study as compared to 28.8kg reported in their study. Uterine stump and cervical inflammations observed in this study were probably due to sepsis, use of suture materials and incomplete extirpation of uterine tissue. The incidence reported in this study was however lower than the finding of Kassem (1985). The extensive use of non-absorbable suture materials for ligatures in their study may be a factor in this regard. Uterine stump inflammation and granuloma have been associated with ligatures of nonabsorbable suture material (Okken *et al.*, 1983) Swollen vulva with discharge was the most prominent clinical feature in bitches with gynaecological complications in this study. Recurrent estrus was observed in 39.1% of bitches with gynaecological complications after OVH. Ovarian tissue remnant after incomplete OVH often becomes cystic and may be the cause of recurrent estrus (Kassem 1985, stone *et al.*, 1991). The occurrence of recurrent estrus observed in this study was quite low when compared with 50.9% reported by Okkens *et al.*, 1983 in a similar study. Higher incidence of ovarian remnant has been associated with the right ovary (Okkens *et al.*, 1983). There was also a positive correlation between the weight of bitches and incidence of recurrent estrus. Relative difficulty in accessing the ovaries in heavy, obese animals may be contributory.

We found surgical removal of remnant ovarian tissue to be satisfactory in correcting the error, even when ovarian remnant could not be seen, the presence of a relatively bigger ovarian vessel on the functional side facilitated identification.

The findings from this study have shown that enterologic and gynaecologic complications did occur following OVH in

bitches. These complications however, differ from the immediate and common postoperative complications that normally attend OVH in that they may occur long after the procedure. Enterological and gynaecological complications should be considered as differential diagnosis in

bitches with a history of OVH presenting with gastrointestinal and gynaecological symptoms. The authors strongly advice that bitches with gastrointestinal symptoms after OVH, even long after surgery, should be suspected of intestinal adhesions and incarcerations.

**TABLE I- Observed clinical signs suggestive of gastrointestinal disorder post OVH**

Observed Signs/Symptom (n=11)	Number of Bitches Involved	Frequency
Chronic Vomiting	9	81.8%
Diarrhea	6	54.5%
Anorexia	8	72.7%
Weight loss	9	81.8%
Pyrexia	5	45.5%

**TABLE II Incidence of observed gross lesions in bitches post OVH**

Anatomic abnormality (n = 11)	Number of Bitches	Frequency
Extensive intestinal adhesion	5	45.5%
Adhesion between intestine and ovarian stump	9	81.8%
Adhesion between bladder and cervical stump	4	36.4%
Adhesion between intestine and abdominal wall	3	27.3%
Presence of abdominal mass	1	9.9%
Adhesion between the intestine, and colon and cervical stump	4	36.4%

**TABLE III Gynecological related complications observed in bitches post OVH**

Number of Bitches Involved (n=23)	Observed Complications	Frequency
14	Incomplete extirpation of the ovaries	60.8%
4	Inflammation of uterine cervical tissues and stump	17.4%
3	Non- resorbable ligatures	13.1%
21	Swollen vulval/Discharge from the vulva	91.3%
9	Recurrent estrus	39.1%
8	Pseudopregnancy	34.7%

**TABLE IV. Weight of bitches in relation to the incidence of complications following OVH**

Weight of bitches (n = 53)	Number of Bitches with complications	Frequency
Below 10kg	Nil	-
10 – 15kg	28	52.8%
15 – 20kg	21	39.6%
20 – 25kg	4	7.5%

**REFERENCES**

- ARNSOHN, M.G AND FAGGELLA, A.M (1993): Surgical techniques for neutering 6 to 14-weeks-old pups and kittens. *J. Amer Vet. Med. Association* **202**, 53-55.
- BERZON, J.L. (1979): Complications of elective Ovariohysterectomy in the dog and ca at a teaching institution: a clinical review of 853 cases. *Vet Surgery* **8**, 389-93
- FINGLAND, R.B. (1990): In Current Technique in small Animal Surgery, 3<sup>rd</sup> Edition by M. Joseph Bojrab. Lea and Feber, Philadelphia, PP 402-404.
- HAPPE R.P, GAAG, I.V.D AND WOLVEKAMP, W.T.C (1989): Enterologic complications after ovariohysterectomy in the Dog. In Proceedings of *Royal Netherlands Vet. Association Congress*, Amsterdam, publication No 13 Congress, Amsterdam publication No13.
- KASSEM, M.M. (1985): Studies on some modifications of ovariohysterectomy in bitches and its complications. *Assiut Vet med J*, **15**, 197
- LIEBERMAN, L.L. (1987): Advantages of early spaying and *neutering*. *J. Amer. Vet. Med Association* **181**: 420-423.
- OKKEN A.C. DIELEMAN, S.J AND GAAG, I.V.D. (1983): Gynaecological Complications after ovariohysterectomy in the Dog. *Tijdschr Diergeneeskd* **106**:142
- STONE, E.A, CONRELLIC.G AND SHARP N.J.H (1993): Ovariohysterectomy: In Slatter, Textbook of Small Animal Surgery. Vo1 II 2<sup>nd</sup> Edition. W.B. Saunders Company. Pp 1303-1308.