

A case report on surgical management of C-section followed by spaying in a cat



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ABSTRACT

This case study set out to execute cat cesarean section (C-section) followed by spaying using the standard surgical method. A 4.5 kg, 4 years old female cat of local breeds was brought to the Teaching & Training Pet Hospital and Research Center (TTPHRC) in Dhaka during our internship. The queen was pregnant and had given to one kitten 36 hour earlier, but newborn was died and she was unable to deliver the remaining fetuses and there was no straining efforts. So the cat was physically evaluated before going to decision and measurements taken for things like body temperature, anemia, and dehydration etc. To determine any abnormalities and to know actual kitten numbers, a x-ray screening was performed. Hematological and biochemical tests were also done. So the surgeon made decision to do C-section and then the owner gave permission to do the C-section with spaying the cat in order to reduce its aggression and stop it from further reproducing. Using general anesthesia, a standard open surgical technique was used to perform the surgical process. The procedure proceeded smoothly, and the cat was recommended to be monitored for seven days in a sterile squeeze cage. Additionally, it was recommended to apply povidone iodine ointment as an antibiotic until the wound fully healed. During the patient's follow-up, there were no problems. This surgical procedure for cat was really easy, reasonably priced, and highly successful.

Keywords: Spaying, cesarean section, anesthesia

CHAPTER I

INTRODUCTION

A cesarean section more commonly known as C-section is a surgical procedure that involves removing kittens from the uterus. A C-section is typically done in an emergency situation when the animal is having trouble giving birth normally. Dystocia is the most common ailment treated with a C-section. Cat dystocia may result from fetal, maternal, or occasionally a mix of these causes (Stedile et al., 2011). In total, maternal variables have been linked to 67.1% of cases, whereas fetal factors have been linked to 29.7% of cases (Ekstrand & Linde-Forsberg, 1994; Jackson, 1995). Fetal enlargement, malformation, malposition, and aberrant posture are among the fetal causes of dystocia. The primary causes of dystocia in mothers include abnormally strong abdominal and uterine contractions and insufficient dilation of the birth canal (such as from a narrow pelvis, uterine torsion, cervical or vaginal tumor, abscess, cyst, and fibrosis, among other conditions). Uterine inertia, defined as weak or absent uterine contractions during parturition (Raut et al., 2009), is the most common cause of maternal dystocia, accounting for 60.6% of cases in cats (Jackson, 1995; Naoman, 2021). According to Sahoo et al. (2018), uterine inertia may be linked to birth canal structural defects, aberrant hormone levels (particularly oxytocin), or electrolyte imbalances (particularly low plasma calcium). Primary or secondary uterine inertia are the two classifications for this condition (Gendler et al., 2007; Van Den Weijden & Taverne, 1994).

Again the surgical process known as ovariohysterectomy is commonly referred to as spaying. By removing a female cat's uterus and ovaries, it serves as a birth control method. The irreversible procedure known as ovariohysterectomy (OVH) is performed to sterilize female animals during surgery under sterile operating conditions and appropriate general anesthesia (David D, 2010; Kirsan et al., 2013). (Pohl et al., 2012). Typically, a tiny incision is made on her left side, although it is also possible to do this underneath, along her midline (Silva et al., 2012). Spaying keeps an animal from going into heat twice a year in addition to preventing it from becoming pregnant. Surgery is used to eliminate the source of the production of the hormones (progesterone and estrogen) related to the estrous cycle and pregnancy. The purpose of spaying is to make the animal docile and to inhibit reproduction. Additionally, it serves as a disease prevention measure (Janssens and Janssens, 1991). According to Pollari and Bonnett (1996), spaying is the most prevalent type

of elective surgery. It is advised that cats be spayed before they are sexually mature and capable of producing kittens of their own. This often occurs between the ages of four and six months. A laparoscopic technique or a standard open operation can be used for spaying. The open way of spaying is often employed due to the high cost of laparoscopic surgical equipment. For conventional open surgery, a caudal midline incision below the umbilicus is frequently utilized. The size of the animal and the surgeon determine how big the incision should be. The uterine horns are followed to their ends and identified in order to locate the ovaries. Ovariohysterectomy (OVH) can cause some consequences, nevertheless, namely ovarian remnant syndrome (ORS). A partial or total separation of a component of the normal ovary (the fragment may be placed in the wide ligament or near the ovary) that is not noticed at OVH, or the failure to remove both ovaries (most usually the right ovary) at OVH, may cause this syndrome to develop. Previous research on cat spaying has been conducted in Bangladesh (Azizunnesa et al., 2017), but more research is necessary to gain a deeper understanding of improved cat spaying techniques. So, this case study aims to implement and assess the traditional surgical method of C-section of cat with spaying and establish it as an effective method of birth control.

Objective of the study:

1. To carry out and assess the conventional surgical method of cat spaying with c-section.
2. To determine the risks associated with the procedure both before and after anesthesia.

CHAPTER II

MATERIALS AND METHOD

2.1 Case history and description

A female cat of a local breed was brought to the Teaching and Training Pet Hospital and Research Center (TTPHRC), located at Purbachal, Dhaka, on 4th September, 2023. The cat weighed 4.5 kg and it was 4 years old, according to a weighing scale. The owner complained that the queen had given birth to one kitten 36 hour earlier; however, newborn died 30 min after birth. She was unable to deliver the remaining fetuses and there was no straining efforts by cat, also restlessness, anorexia were present. So they wanted to do C-section and gave permission to do this surgery. Also In order to stop the cat from further reproduction and to make it docile, the owner intended to spay the animal too. Firstly, a general physical examination revealed that the patient's body was in fair condition and that its some physiological status was normal, including its body temperature, no physical injuries etc. But the mucus membrane was somewhat pale and the cat was mild dehydrated also. Both the left and right sides of the abdomen were found to have bony-like features when palpated. Auscultation revealed no fetal heartbeat. After that, a x-ray screening was done to determine the cat's any abnormalities in reproductive tract and the actual kitten numbers. The cat's x-ray screening showed that there were 4 kitten and no other major abnormalities were found in uterus (Figure 1). Hematological and biochemical tests were also done. Then it was decided to do C-section with spaying.



Figure 1: A x-ray screening was done before the preparation of patient.

2.2 Anesthesia and control

Both chemical and physical restraints were used for the cat. The cat was initially held on its side with its back to the handler, who was holding onto the cat's neck with a forearm over its front and rear legs. After that, sedation was administered. Pre-anesthetic Xylazine hydrochloride solution (Inj. Xylazine) (1 mg/kg body weight) was used to induce sedation. The surgical site was prepared by clipping, shaving and washing, which is located at the caudal midline, 2 cm from the umbilicus. Aseptic preparation of the surgical site was done before the surgery by Povidone iodine, Savlon and 70% alcohol. Normal saline was given intravenously to the animal as fluid therapy to keep it healthy. An intravenous general anesthetic with 10 mg/kg body weight of ketamine hydrochloride was used. During the procedure, the maintenance anesthetic dose was administered at half of the initial dose.

2.3 Operation procedure

Under general anesthesia, the procedure was performed aseptically. The patient was kept on the operating table with the surgical site left exposed and covered with a sterile drape. On the skin, a 1-2 cm long incision was made at the caudal midline, about 2 cm away from the umbilicus. By using artery forceps and gauge pressure, the bleeding was checked. The peritoneum, muscle, and subcutaneous tissue were incised sequentially. The uterine horn was detected by fingers and the ovaries were discovered by following the horn to its ends, after the surgeon had finished cutting through all layers of tissue with his index finger inserted toward the left flank into the abdominal cavity. After getting out the uterus there was made an incision on the uterus and found 4 kittens. Between the thumb and index finger, the ovary was held and pulled out for ligation. Using fingers, a big incision was produced in the broad ligament exposing the blood vessels of the ovarian connection. The ovarian pedicle was ligated using a double ligation of catgut (1-0). There was no longer any link between the ovary and the ligature. One ovary was removed, and then another in a similar fashion. Then the uterine vessels were divided and ligated with transfixation on both sides and the uterus was removed from the abdominal cavity. In order to stop bleeding, the uterine stump was thoroughly examined next. Catgut (1-0) was used to stitch the peritoneum, muscle layers, and fascia individually using a basic continuous suture pattern. Subcuticular suturing was then performed using catgut (2-0), and non-absorbable nylon suture material was used for horizontal

mattress suturing on the skin. Following the completion of the skin's sutures, the incision line was treated with antiseptic povidone iodine (ointment Povin), and the area was then sealed with benzoin.



Figure 2: Cleaning and shaving the operating area.



Figure 3: IV cannula set up and aseptic preparation of patient.

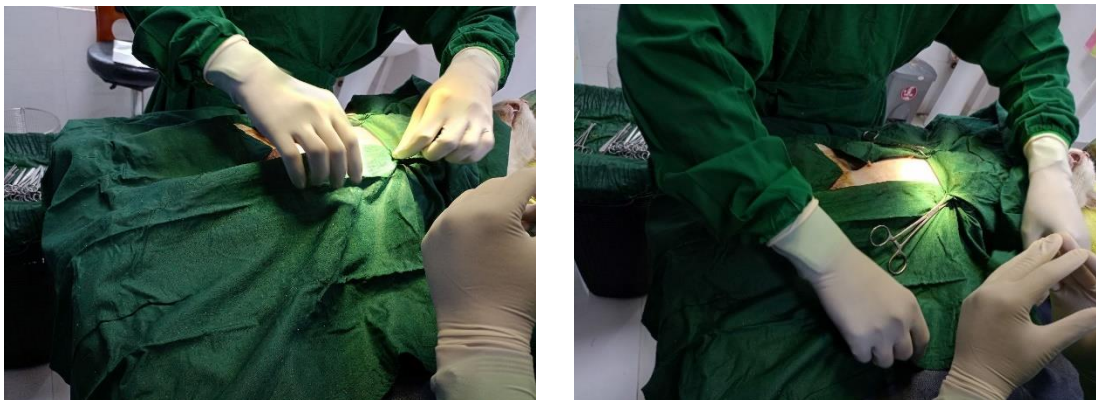


Figure 4: Wearing draper to patient to avoid contamination.

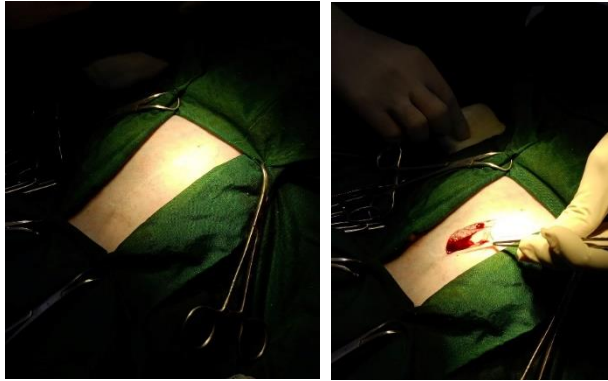


Figure 5: Incision in the operating site (caudal to the umbilicus).



Figure 6: After finding the uterus make a incision on uterus and getting out the kittens.



Figure 7: Removal of uterus with, ovary and different suture patterns on skin, muscle etc.



Figure 8: Application of povidone iodine ointment and bandage on the insion site.

2.4 Post operative care

Following surgery, five days of intramuscular ceftriaxone at a rate of 20 mg/kg body weight (Inj. Ceftron IM 250 mg) were given. Intramuscular administration of 0.5 mg/kg body weight of antihistaminic chlorpheniramine maleate (Inj. Alerin 10ml) was carried out for five days. Meloxicam, an analgesic, was injected subcutaneously for three days at a rate of 0.2 mg/kg body weight (Inj. Melvet 10ml). multivitamins also supplied to the patient. It was recommended that the animal be kept in a hygienic squeeze cage and observed for seven days. The owner was advised to apply antiseptic povidone iodine ointment on the area of the incision until it healed fully. Throughout the procedure, the operating room was kept sterile and clean. The queen healed without any complications. When the suture was taken out on day 14, it was observed that the surgical site had fully healed.

CHAPTER III

RESULT AND DISCUSSION

The cat came out of anesthesia promptly, and there were no problems, thus the procedure went properly. Following her anesthetic recovery, the patient was sent home with a prescription for five days of systemic antibiotic medication. The owner was given instructions that advised giving medications exactly as recommended on a daily basis. According to Jason (2009), in dogs and cats, a tiny incision is usually performed near the midline, where there are fewer blood veins. The blood vessels are sealed off, and the uterus and ovaries are completely removed. After using absorbable suture material to sew the inside body wall, the outer layer of skin was closed. The identical methodology was applied in this inquiry.

The same protocol was used for C-section with spaying in this investigation. The surgical wound infection, stump granuloma, fistulous draining tracts, chewed-out sutures, bleeding, and abdominal wall dehiscence were among the complications “Burrow and Batchelor (2005)” documented as being related to the suture material or ligatures. However, such issues did not arise for us. After visiting the TTPHRC once more on the 10th day following surgery, the patient's incision had fully healed. “Janssens and Janssens (1991)” found that spaying an animal can inhibit reproduction and make it docile. It may also aid in shielding them from various reproductive system malignancies, uterine infections, and uterine cancer. The owner of the cat in this study wanted to spay it in order to stop it from further reproducing and to make it less aggressive. It has been demonstrated that spayed female dogs have a 23% longer lifespan than unspayed female dogs and are less likely to develop mammary tumors and pyometra. But according to Kutzler and Wood (2006), intrauterine calcium chloride injection is a nonsurgical approach that can successfully influence libido, androgenesis, and spermatogenesis in dogs without being toxic or having major negative effects. Similar to the successful procedure carried out by “Janssens and Janssens, 1991”; “Azizunnesa et al., 2017”, the operation was successful. According to “Slingsby et al. (1998)”, there is less discomfort since the right anesthetic technique and analgesic treatment were administered. However, during this study, no issues or more bleeding were noticed.

Table 1: Hematological analysis of cat

| Hematological parameters | Results | Reference value |
|---------------------------------|----------------|------------------------|
| Total RBC | 4.5 | 5-10 |
| Total WBC | 4 | 5.5-19.5 |
| PCV (%) | 22 | 29-45 |
| Hb (%) | 7.5 | 9.8-15.4 |
| MCV (fl) | 56 | 41-54 |
| MCH (pg) | 15 | 13-17 |
| MCHC (%) | 34 | 31-36 |
| Neutrophil (%) | 82 | 35-75 |
| Lymphocyte (%) | 21 | 27-36 |
| Monocyte (%) | 6 | 0-5 |
| Basophil | 0 | 0-1 |
| Eosinophil (%) | 2 | 0-4 |

Table 2: Biochemical analysis of cat

| Biochemical parameters | Results | Reference value |
|-------------------------------|----------------|------------------------|
| AST | 34 | 7-38 |
| ALT | 92 | 25-97 |
| Urea | 40 | 19-34 |
| Creatinine | 3.1 | 0.9-2.2 |

According to the current study, the cat's hemoglobin level had dropped, indicating anemia. Decreased feed intake, lack of iron and vitamins might be the causes of poor erythropoiesis under this condition. Loss of dietary iron may be the cause of lower PCV level. The most common findings in this queen were absolute neutrophilia, lymphopenia, and monocytosis with normal eosinophil count. Neutrophilia might be due to stress and inflammation. lymphopenia might be due to severe stress. In this investigation, a process of suppression of liver enzyme synthesis or potential hepatic membrane injury can account for the higher ALT result. In this instance, an increase in blood urea nitrogen and creatinine concentrations may indicate dehydration (Nak, 1999).

CHAPTER IV

CONCLUSION

It was discovered that the conventional surgical method of C-section followed by spaying in a cat was the most suitable. It was a fast, workable, field-tested, and dependable method. Also it was an easy-to-use, realistic, tried-and-true way of spaying cats. There were no issues with monitoring the spayed cat in this trial. Throughout the investigation's follow-up with the spayed cat, there were no problems. For the field condition, this conventional surgical method of spaying could be advised in order to lessen its aggression and stop reproduction. It is suggested that more research be done to simplify the process.

LIMITATIONS

Due to our hectic internship schedule, the study period was somewhat brief. Consequently, I have limited the number of cases that I have used in this study to one (cat c-section followed by spaying).

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BIOGRAPHY

The writer, **Md Imrul Hasan**, the son of Md Abdul Hadhi and Shahanaj Begum, completed his examinations for the Secondary School Certificate (SSC) from Kakni Model Academy High School in Phulpur in 2014 and the Higher School Certificate (HSC) at Agricultural University College in Mymensingh in 2016. He then enrolled in Chattogram Veterinary and Animal Sciences University (CVASU), in Bangladesh, to pursue a Doctor of Veterinary Medicine (DVM) degree. He is currently an intern student at this university.

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