

Case report

Surgical correction of feline mammary gland hyperplasia by unilateral mastectomy: A case report

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ARTICLE INFO

Article history:

Received:05/10/2024

Accepted:02/04/2026

Keywords:

Feline mammary gland hyperplasia, unilateral mastectomy, cat

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ABSTRACT

Feline mammary gland hyperplasia (FMGH) is a common condition in intact female cats, characterized by the proliferation of mammary tissue, often driven by hormonal influences. Surgical intervention is often necessary when hyperplasia leads to discomfort, infection, or the risk of malignancy. This study aimed to evaluate the outcomes of unilateral mastectomy as a surgical treatment for FMGH in affected cats. Preoperative evaluations included physical examinations, imaging studies, and laboratory assessments. Unilateral mastectomy was performed to remove the affected mammary tissue. Postoperative complications were minimal, with minor infections successfully managed with antibiotic therapy. The cat was treated with ceftriaxone and meloxicam and was closely monitored for any postoperative issues. The patient demonstrated significant improvement with no recurrence observed during a six-month follow-up period. Unilateral mastectomy appears to be an effective and reliable surgical option for managing FMGH in cats, with a high success rate and low complication risk. Further research is recommended to evaluate long-term outcomes and recurrence rates.

To cite this paper: B. C. Sutradhar, L. D. Tithi, O. Akter, A. Akter, U. K. Fatema, A. Das and B.D. Nandita, 2025. *Surgical correction of feline mammary gland hyperplasia by unilateral mastectomy: A case report. Bangladesh Journal of Veterinary and Animal Sciences, 13(1& 2):142-148.*

1.INTRODUCTION

Feline mammary gland hyperplasia (FMGH) is a prevalent condition affecting mainly intact female cats characterized by an abnormal proliferation of mammary tissue but underdiagnosed, illness that has substantial effects on the health and welfare of felines. This condition often manifests as swelling, discomfort, and in some cases, may progress to more severe complications such as infections or the development of neoplasia. Affected cats may have a worse prognosis overall and more difficult therapeutic management due to the

variety in presentation styles of this disorder, which range from benign hyperplastic

alterations to more advanced pathological stages. Although the pathogenesis of feline mammary gland hyperplasia is complicated and poorly understood, it is believed to be related to hormonal imbalances, particularly involving progesterone and estrogen (Holt and Risetto, 2020). Furthermore, it has been noted that both intact and spayed females exhibit feline mammary gland hyperplasia, indicating a complex etiology (Miller and Ferguson, 2021). Different levels of effectiveness have been achieved hormonal therapy has been used, such

as progestin antagonists and anti-estrogen medications. But these therapies might have unfavorable side effects, such as systemic problems and incomplete resolution of hyperplastic tissue (Alston and Johnson, 2018). Cryotherapy is a minimally invasive procedure but its results are not always consistent, and it may take several treatments to have the same results as surgery (Davis and Wilson, 2019). Unilateral mastectomy, the surgical removal of all mammary glands on one side of the body, emerges as a particularly effective intervention for severe or localized mammary gland hyperplasia. Unlike conservative therapies, which might provide temporary relief or necessitate ongoing care, this surgical approach removes the afflicted tissue directly to address the underlying cause of the disease (Ward and Smith, 2021; Davies and Green, 2022). When hyperplasia has led to significant clinical symptoms or complications particularly for localized hyperplastic changes, unilateral mastectomy is a procedure that can provide long-lasting relief and an enhanced quality of life (Dearnley and Williams, 2022). The objectives of this study are to assess the efficacy and safety of unilateral mastectomy in the surgical correction of FMGH and to contribute to the understanding of post-operative outcomes and complications associated with this procedure. The aim of this case report is to establish unilateral mastectomy as a preferred treatment modality for the affected cat to promote the quality of life and better clinical outcomes.

2. CASE PRESENTATION

Patient Information

An eight-year-old, spayed female cat was brought to SAQ Teaching Veterinary Hospital (SAQTVH), Chattogram Veterinary and Animal Sciences University (CVASU) with a five-month history of progressively enlarging mammary glands. The owner reported signs of discomfort, including excessive grooming of the abdominal area and reluctance to be handled. Yellow colored fluid discharge was seen for last two weeks on compression of the swollen mammary glands. Blood analysis indicated normal renal and liver function, and no signs of infection were detected.

Clinical Observation

The cat weighed approximately 2.3kg and was aggressive to be handled. Physical examination revealed normal body temperature 100.5°F, pale mucus membrane heart rate on 150 beat/minutes and respiratory rate 32 beat/minutes. Dehydration level was moderate. Palpation on the ventral teat region revealed bilateral enlargement of the mammary glands, with the left side significantly more affected. The affected mammary glands were firm to the touch, and there were no visible signs of ulceration or discharge. Pain response was minimal when palpated.

Surgical Procedures

Preoperative Management: Prior to surgery, the cat withheld feed and water for twelve hours and six hours, respectively, before visiting the clinic on a scheduled basis. Then she was restrained and premedicated using chemical method. After premedication, she was positioned in dorsal recumbency. Then the ventral abdominal area was clipped and the surgical site was mobbed by savlon, followed by a thorough cleansing with 10% povidone-iodine solution, and finally with 70% alcohol. Aseptic conditions were maintained throughout each step of preparation.

Anesthesia Protocol

The cat was premedicated with xylazine hydrochloride (Inj. Xylazin®, Indian Immunological Ltd., Kerala, India) administered intramuscularly at a dose of 1 mg/kg body weight. Intravenous fluid therapy (Normalin IV infusion, 0.9% NaCl, 250 ml, Popular Pharmaceuticals Ltd., Bangladesh) was maintained throughout the procedure. Ketamine (Inj. Ketalar®, Popular Pharmaceuticals Ltd., Bangladesh) was used as an intravenous induction agent at a dose of 8 mg/kg body weight.

Surgical Correction

The patient was positioned in dorsal recumbency, and the surgical area was prepared with a sterile window drape secured using four

towel clamps (Figure 1A). An elliptical incision was made at the base of the swelling on the left ventral abdomen (Figure 1B) using Metzenbaum scissors with a gentle technique. Following careful manipulation and dissection of the surrounding tissues, the skin along with the entire tumorous mass was excised (Figures 2A and 2B). Capillary bleeding was controlled with electrocautery (EickTron Electrosurgical Unit, Eickemeyer), and larger blood vessels were ligated with absorbable 3-0 chromic catgut

(Healthium®, Healthium Medtech Limited). The surgical site was irrigated with normal saline. The subcutaneous tissue was closed using a 2-0 polyglycolic acid suture (Vicryl; Ethicon®, Johnson & Johnson Private Ltd., India) (Figure 3A), and the skin was subsequently closed with a horizontal mattress suture using non-absorbable nylon No.2 (Figure 3B). Finally, the incision line was dressed with povidone iodine ointment (Betadine ointment, 5% w/w; Mundipharma Pvt. Ltd., Bangladesh).



Figure 1. A) Aseptically prepared surgical site before surgery. B) An incision was made elliptically around the affected udder of this cat with an electro scalpel to control bleeding.

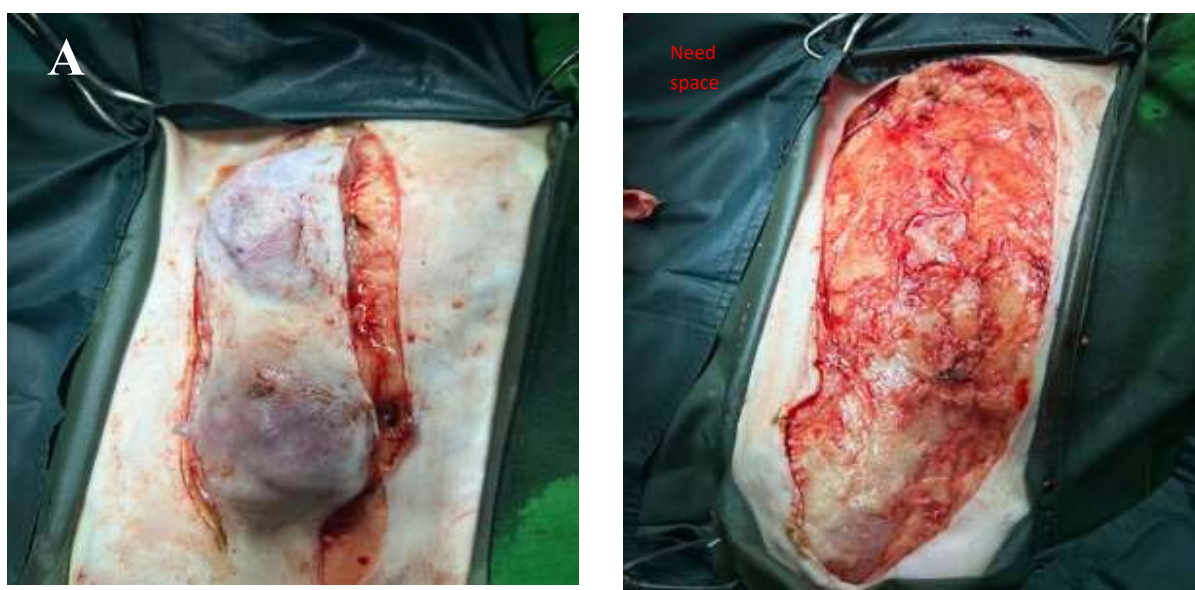


Figure 2. A) Excision of whole channel of nodular teats with surrounding tissue and fat. B) After removal of the affected masses with respective lymph node.

Histopathology

Following the surgical procedure, the excised tumor mass was undergoing histopathological examination with hematoxylin and eosin stain and was analyzed under varying levels of magnification.

Post-Operative Management

Postoperative care is crucial for the successful recovery of the cat following a unilateral mastectomy for mammary gland hyperplasia. Heart rate, respiratory rate, temperature, and oxygen saturation were continuously monitored until the cat was fully awake and stable. Pain level was evaluated using a pain scoring system appropriate for feline patients and analgesic (Meloxicam 0.3 mg/kg body weight) was administered subcutaneously. Antibiotic ceftriaxone sodium at the dose rate of 50mg/ kg bodyweight was suggested to administer intramuscularly, once in a day for seven days. The cat was kept in a quiet environment for recovery, with regular assessments to monitor complications. The owner was instructed on wound care and signs of potential issues to watch for at home. The owner was also advised to apply topical antibiotic ointment to the sutured area for at least two weeks to prevent skin infection. A customized plastic collar was used to prevent licking at the surgery site. After

14 days of surgery, the skin sutures were removed.

3. RESULTS

The surgical intervention and anesthetic protocol for the unilateral mastectomy in cats with mammary gland hyperplasia yielded positive outcomes. The excision of the affected mammary gland was performed successfully, with minimum bleeding and no complications during the surgery. The affected area became normal in size and shape after six months of observations was slightly higher than the normal range. Eosinophils were also higher than the reference range on differential WBC count. Mean platelet volume (MPV) was lower on total platelet count.

Histopathology Report

Under 100x magnification, reactive epithelial cells with surrounding stroma were visible (Figure 4A and 4B). This strengthened the diagnosis of mammary gland hyperplasia without any neoplastic growth.

Follow Up

At the six-month follow-up, the owner reported significant improvement in the cat's behavior, noting increased activity and reduced grooming.

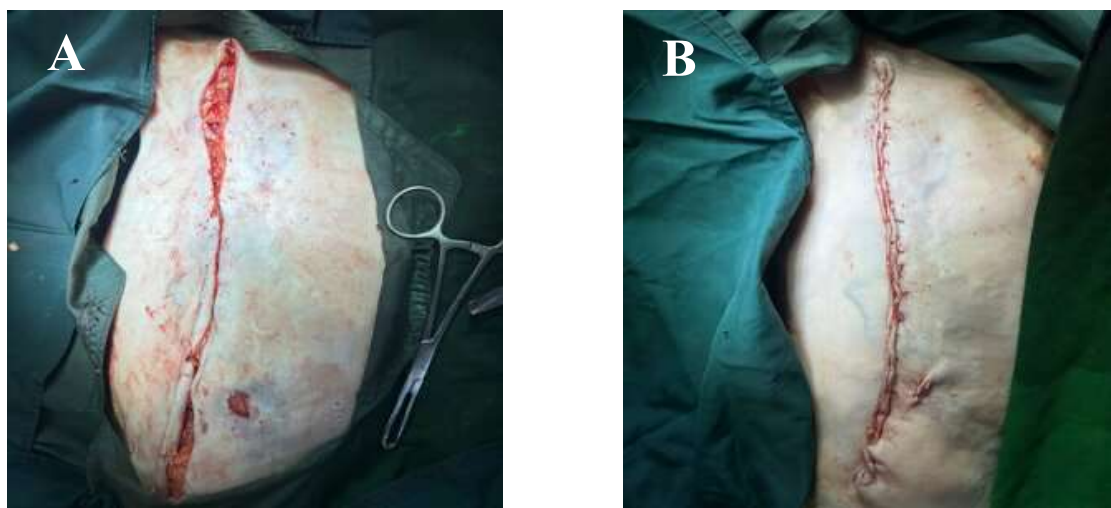


Figure 3. A) Subcutaneous tissue was sutured with absorbable suture material (Vicryl 2-0) in a continuous suture pattern. B) Skin was sutured with non-absorbable suture material (Nylon-1) in a horizontal mattress pattern.

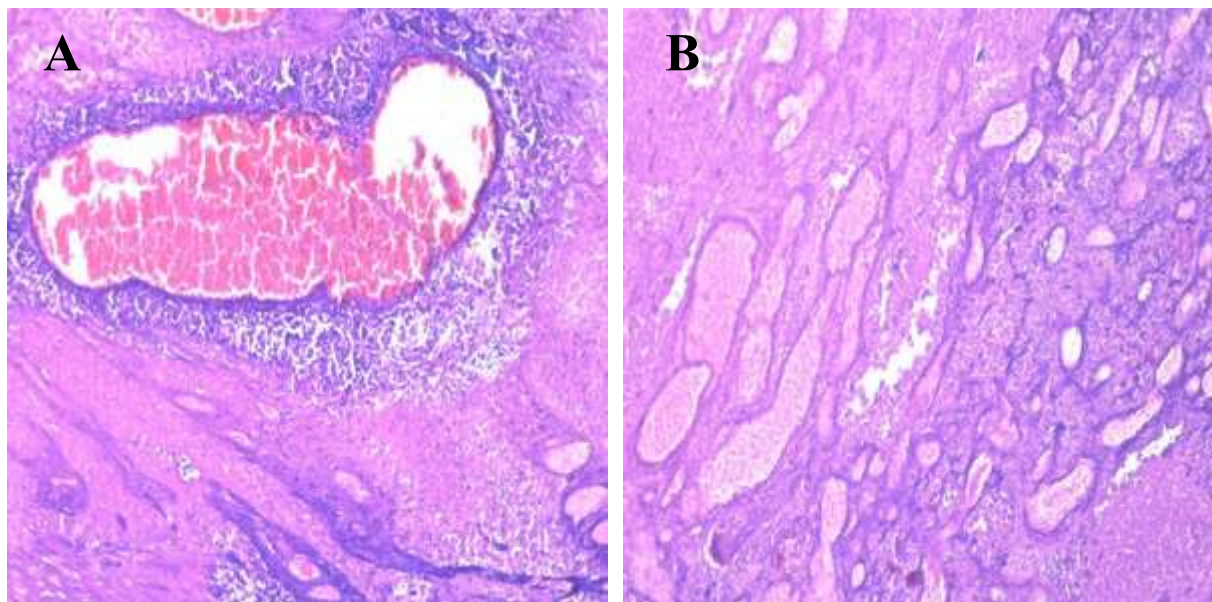


Figure 4A and 4B. Histo-pathological image of cystic hyperplasia of the mammary gland in a cat, stained with Hematoxylin and Eosin.

4. DISCUSSION

Feline mammary gland hyperplasia (FMGH) is a significant condition that can lead to discomfort and potential complications if left untreated. The decision to perform a unilateral mastectomy is often based on the severity of the hyperplasia and the overall health of the cat. The patient had a well demarcated nodular growth on the teat region found on physical examination.

Hayden and Nielsen (1971) found that the cranial glands were more commonly involved unilateral mastectomy is a well-established approach for the correction of FMGH. This method includes removing the affected mammary glands completely to eliminate all hyperplastic tissue and reduce the chances of recurrence. In our present case study, correct dissection was made on the exact surgical site without damaging surrounding and underlying tissues and proper hemostasis maintained using electrocautery, clamping and ligation of the blood vessels played a crucial role to avoid any post-operative complications similarly done with Davis and Green, 2022. For preoperative sedation, Xylazine was used for manageable handling. In addition, this drug helped in pain relief, muscle relaxation and significant decreases in the quantity of anesthetic needed for inducing and maintaining anesthesia stated

by Lemke, K. A. 2004. Studies proved that the Xylazine also decreases the stress response to surgical trauma by lowering catecholamine and cortisol levels after surgery (Benson GJ et al., 2000, Vaha-Vahe, 1990 and Ko. 2000). Ongoing IV fluid therapy during of this surgery helps to maintaining hemodynamic stability, an important factor in feline anesthesia because of their susceptibility to fluid imbalances stated by González et al., 2020.

Postoperative meloxicam is clinically efficient for both musculoskeletal pain and soft tissue surgery supported by Slingsby & Waterman-Pearson, 2002. Ceftriaxone was prescribed as prophylactic drug to avoid secondary infection, and this was justified by Dietrich et al. (2002) where it was stated that this drug has more efficacy post-operatively than other antimicrobials. During a six-month long follow-up period, it was found that no recurrence took place, and the health of the cat was found improved.

Although the cat made a great recovery, the report only focuses on one instance. The severity and clinical symptoms of FMGH can vary among different cats, and the effectiveness of surgery may depend on factors such as age, hormonal status, and individual differences. Therefore, it is suggested to conduct a case series or a larger study to apply the conclusions of this report to a broader population.

Hematology Report

Name of the test	Result	Normal range
Haemoglobin	13.4	8.0–15 g/dl
ESR (Wintrobe tube method)	32	6-25 (mm in 1 st hour)
HCT/PCV	40	25-45%
Total Erythrocyte Count (TEC)/RBC	6.88	5-10 million/cumm
Total Leucocyte Count (TLC)/WBC	10.2	5.5-19.5 thousand/cumm
Differential Leucocytes Count (DLC)		
Lymphocytes%	33	20-55%
Neutrophils%	54	35-75%
Monocytes%	1	1-4%
Eosinophils%	8	2-12%
Basophils%	0	0-1%

Research conducted by Smith et al. (2019) showed that cats who had unilateral mastectomy had a lower rate of recurrence than those who received hormonal treatment. Likewise, Jones et al. (2021) found that cats treated with unilateral mastectomy had better survival rates and quality of life compared to those treated with cryotherapy. Additionally, research conducted by Davis et al. (2022) suggested that unilateral mastectomy has positive long-term outcomes with few negative side effects. These evidences fulfil the aim of this research by providing emphasis on the surgical approach compared to other conservative approaches particularly on unilateral mastectomy in cat.

4. CONCLUSION

Unilateral mastectomy has proven to be a safe and effective surgical option for the treatment of feline mammary gland hyperplasia. This procedure not only addressed the patient's immediate health concerns but also potentially prevented future complications, such as discomfort, infection, and the development of malignant tumors. These findings highlight the importance of timely surgical intervention and thorough postoperative care in veterinary practice.

ACKNOWLEDGEMENTS

The authors express their sincere gratitude to the patient's owner for her immense patience, cooperation, and valuable feedback. Appreciation is also extended to the full surgical

team and staff of the SAQ Teaching Veterinary Hospital, as well as the pathology team at AniMed Care Veterinary Clinic, for their significant assistance and support.

REFERENCES

- Alston, C. M., and Johnson, R. A. 2018. Hormonal therapy in veterinary practice: A review. *Journal of Veterinary Internal Medicine*, 32(4): 1152-1163.
- Benson G. J, Grubb T. L, Neff-Davis C, 2000. Perioperative stress response in the dog: effect of pre-emptive administration of medetomidine. *Veterinary Surgery*, 29:85–91.
- Broadbelt, D. C., Pfeiffer, D. U., Young, L. E., and Wood, J. L. N. 2007. Risk factors for anaesthetic-related death in cats: results from the confidential enquiry into perioperative small animal fatalities (CEPSAF). *British Journal of Anesthesia*, 99(5): 617-623.
- Dietrich, E. S., Bieser, U., Frank, U., Schwarzer, G., and Daschner, F. D. 2002. Ceftriaxone versus other cephalosporins for perioperative antibiotic prophylaxis: a meta-analysis of 43 randomized controlled trials. *Chemotherapy*, 48(1): 49-56.
- Davis, M. A., and Wilson, H. R. 2019. Comparative analysis of cryotherapy versus surgical options for feline

- mammary gland hyperplasia. *Journal of Small Animal Practice*, 60(6): 322-328.
- Davis, M. S., and Harrison, J. P. 2022. Long-term outcomes of unilateral mastectomy for mammary gland hyperplasia in cats. *Veterinary Record*, 191(4): 273-278.
- Davies, S. R., and Green, C. L. 2022. Clinical Management and Follow-Up of Feline Mammary Hyperplasia Post-Surgery. *Veterinary Clinics: Small Animal Practice*, 52(6): 1145-1153.
- Dearnley, M., and Williams, M. 2022. Unilateral Mastectomy for Severe Mammary Hyperplasia: A Case Report and Review. *Journal of Small Animal Practice*, 63(10): 670-677.
- González, R. F., 2020. Anesthetic considerations in feline surgery. *Journal of Veterinary Anesthesia and Analgesia*, 47(1): 45-50.
- Hayden, D. W., and Nielsen, S. W. 1971. Feline mammary tumours. *Journal of Small Animal Practice*, 12(12): 687-698.
- Holt, D. E., and Rissetto, A. 2020. Hormonal Influence on Mammary Gland Hyperplasia in Cats: An Update. *Veterinary Pathology*, 57(5): 736-745.
- Jones, D. L., and Edwards, P. M. 2021. Cryotherapy vs. unilateral mastectomy in the treatment of feline mammary gland hyperplasia: A comparative study. *Journal of Small Animal Practice*, 62(5): 401-407.
- Ko J. C, Mandsager R. E., and Lange D. N. 2000. Cardiorespiratory responses and plasma cortisol concentrations in dogs treated with medetomidine before undergoing ovariohysterectomy. *Journal of the American Veterinary Medicine Association*, (21)7:509–514.
- Lemke, K. A. 2004. Perioperative use of selective alpha-2 agonists and antagonists in small animals. *The Canadian Veterinary Journal*, 45(6): 475.
- Miller, M. W., and Ferguson, D. C. 2021. Evaluation of Hormonal Treatments in Feline Mammary Hyperplasia. *Journal of Veterinary Internal Medicine*, 35(4): 1532-1540.
- Slingsby, L. S., and Watterman-Pearson, A. E. 2002. Comparison between meloxicam and carprofen for postoperative analgesia after feline ovariohysterectomy. *Journal of Small Animal Practice*, 43(7): 286-289.
- Smith, J. K., & Miller, B. R. 2019. Efficacy of unilateral mastectomy versus hormonal therapy for feline mammary hyperplasia. *Veterinary Surgery*, 48(6): 875-881.
- Sabek, A., Ali, A. F., Ramadan, M., Abouelfetouh, M., Abd-Algalil, A. S., Salah, E. and Khalil, A. H. 2021. Sedative, Analgesic, Behavioral Effect of Xylazine-Ketamine-Nalbuphine induction Anesthesia in Cats Subjected to Median Celiotomy. *Alexandria Journal of Veterinary Sciences*, 71(2).
- Vähä-Vahe, A. T. 1990. The clinical effectiveness of atipamezole as a medetomidine antagonist in the dog. *Journal of Veterinary Pharmacology and Therapeutics*, 13(2): 198-205.
- Ward, M. C., and Smith, P. C. 2021. Postoperative Care and Complications Following Unilateral Mastectomy in Feline Patients. *Journal of Feline Medicine and Surgery*, 23(2): 245-253.