



Clinical Management and Histopathological Findings of Vaginal Myxoma and Fibroma in Female Dogs

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ABSTRACT

Five female dogs were presented at Veterinary Clinical Complex, College of Veterinary and Animal Sciences, Sardar Vallabh Bhai Patel University of Agriculture & Technology, Meerut, Uttar Pradesh with the history of protruded mass from the vagina. The animals were anorexic, dull with slightly elevated temperature. Confirmatory diagnosis was made by histopathological examination of these tissues. Two of the she dogs were diagnosed with vaginal myxoma and other three were diagnosed with fibroma. The treatment included surgical removal of protruded mass and follow-up treatment with antibiotics, NSAIDS, multi-mineral and multi-vitamin supplements.

Key words: Myxoma, Fibroma, Vaginal tumour, Female dog.

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INTRODUCTION

Genital tract tumors make up approximately 3% of all tumor cases in dogs. These tumors are commonly observed in middle-aged intact female dogs (Koestner and Higgins, 2008). Among these genital tract tumors, a significant portion (around 85-90%) occurs in the external genital organs such as the vulva, vagina, and vestibule (James *et al.*, 2012). Specific types of tumors like leiomyomas, leiomyosarcoma, fibroma, and transmissible

venereal tumor are more commonly found in the vulva and vagina (MacLachlan and Kennedy, 2002). Other rare tumor types include lipoma, fibrous histiocytoma, benign melanoma, myxoma, myxofibroma, adenocarcinoma, hemangiosarcoma, osteosarcoma, and epidermoid carcinoma (Corey and Lawrence, 2013).

In female dogs, the occurrence of tumors in the lower reproductive tract is higher compared to tumors in the upper reproductive tract (Saahithya *et al.*, 2018),

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with vaginal tumors being more frequently diagnosed than ovarian or uterine tumors (Dreier, 1998). They are generally not life-threatening, but can cause discomfort and pain to the affected animal. One common benign tumor, myxoma, arises from the connective tissue cells of the vaginal walls. Microscopically, myxoma cells exhibit abundant myxomatous matrix and have a plump, star-shaped, and spindle-shaped nucleus (De Nijs *et al.*, 2016). These tumors typically grow slowly and may not exhibit symptoms until they become large enough to obstruct the vaginal canal or cause discomfort during urination or defecation. While they might not impact normal fertility they can interfere with natural mating or whelping due to obstruction of the vaginal tract (Al-Kenanny *et al.*, 2013). Additionally, there is a potential risk of these tumors growing to a size that affects organ function or leads to other complications.

Fibromas are commonly benign spherical neoplasms composed of hard, white mesenchymal fibroblast cells. They are characterized by an extensive collagenous stroma that typically generates elastin, collagen, and fibroglia (Prasath *et al.*, 2020). There are two main types of fibromas observed in dogs: hard and soft. The cut surface of a hard fibroma often appears dry and white, revealing mature fibrous connective tissue cells. These fibromas have a firm texture and are solid in appearance. On the other hand, soft fibromas are usually pedunculated and possess lower collagen content. They exhibit a spongy, vascular, and edematous appearance (Rajamohan *et al.*, 2018).

Fibromyxomas are uncommon, benign tumours originating from fibroblast or fibrocyte cells. They are characterized by an abundance of mixed collagenous and myxomatous stroma (Prasath *et al.*, 2020). In fibromas, each cell typically displays two extended ends. Both myxomas and fibromyxomas exhibit resemblances, as they both entail the rapid multiplication of undeveloped mesenchymal cells that generate a shapeless, matrix between cells that is abundant in mucin (Alhousami *et al.*, 2018). Both myxomas and fibromyxomas are infrequently observed benign tumors in dogs and cats.

This discussion aims to provide insight into the diagnosis, macroscopic and microscopic characteristics, and surgical treatment of vaginal myxomas and fibromas in female dogs. The study focuses on five clinical cases treated at the Veterinary Clinical Complex of the university.

CASE HISTORY AND OBSERVATIONS

A total of five female dogs were presented to the Veterinary Clinical Complex at the College of Veterinary and

Animal Sciences, Sardar Vallabh Bhai Patel University of Agriculture & Technology, Meerut, Uttar Pradesh. These dogs exhibited a common history of having a protruding mass from the vaginal area (Figure 1).



Fig. 1: Bitch showing vaginal tumour

It is noteworthy that none of these dogs had undergone mating before. The protruding masses displayed characteristics such as oedema and hyperaemia. Furthermore, the affected animals were observed to be anorexic, lethargic, and depressed, and they exhibited an elevated rectal temperature. Comprehensive details pertaining to each case can be found in the subsequent table.

Table 1: Details of dogs included in the study

Sr no	Breed	Parity	Age	Diagnosis
1.	Labrador	Nulliparous	11 years	Vaginal Myxoma
2.	Beagle	Nulliparous	2.5 years	Vaginal Myxoma
3.	Labrador	Nulliparous	8 years	Fibroma
4.	Pomeranian	Nulliparous	10 years	Fibroma
5.	Non-descript	Nulliparous	2 years	Fibroma

TREATMENT AND DISCUSSION

After thorough examination of the tumour mass, decision of physical excision of the tumour mass was taken. Before surgery, the animal received pre-medication with a dose of 0.01 mg/kg of Glycopyrrolate intramuscularly as a preanesthetic agent. Surgery was performed under induction anaesthesia of Xylazine (1.8 mg/kg) and Ketamine (10 mg/kg) administered intramuscularly. General anaesthesia was maintained using Ketamine and Diazepam (2:1 ratio). The protruding mass was excised and removed after circumcising the area after proper ligation (Figure 2).

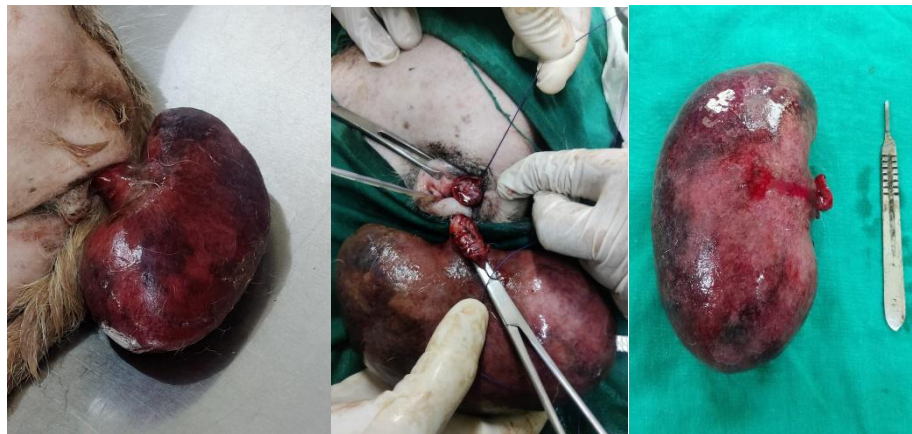


Fig. 2: Surgical procedure - removal of protruded mass

To prevent further bleeding, the circumcised area was irrigated with adrenaline. Post operative management involved antiseptic dressing along with a course of antibiotics (Amoxicillin Sodium + Sulbactam Sodium @ 15 mg/kg), analgesics (Tramadol @ 2 mg/kg) and haemostyptic (Ethamsylate @10 mg/kg) along with multivitamin and multiminerals syrups for 5 days. The animals made an uneventful recovery within 20 days. After the surgical extraction, the tumour was dissected, leading to the appearance of white, firm, and mucinous exudate emanating from the mass (Figure 3).

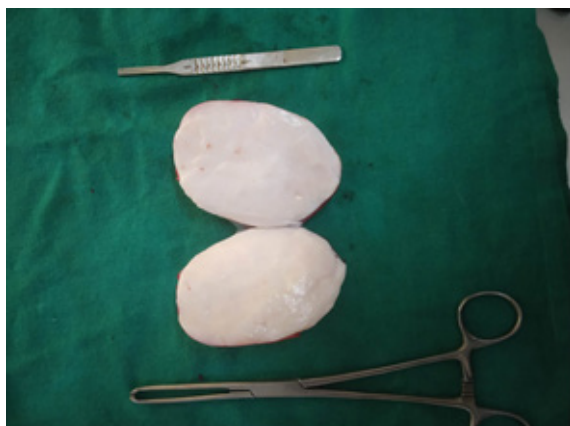


Fig. 3: Incised protruded mass showed white, hard and mucinous exudate

Evaluation of fibroma disclosed tumours with dimensions ranging from 4 to 5 cm in diameter and an average weight of 275 g. The dissected surface of the tumour exhibited whitish appearance. As evident from the cases detailed in this report, the symptoms exhibited by female dogs with myxoma and fibroma tend to vary based on the size and location of the respective tumours. Common signs observed in the cases under investigation encompass the presence of a visible lump or mass, licking of genital area, signs of discomfort. The existence of a tumour in the vaginal region could also give rise to vulvar discharge

or the sudden emergence of a protruding mass from the vulva (Thacher and Bradley, 1983). Chronic cases could be associated with lethargy, decreased appetite, and vulvar bleeding (Sadar *et al.*, 2011). However, these symptoms were not observed in the cases under report, as the dogs were attentively managed, and their owners sought medical attention during the early stages of the condition. In protracted cases, the tumour might exert pressure on the urethra and rectum either externally or internally, leading to challenges or discomfort during urination and defecation (Gupta *et al.*, 2014). The pressure could also result in vulvar bleeding, which might manifest intermittently or persistently. Given the similarity in clinical signs exhibited by both myxoma and fibroma, a definitive diagnosis can only be established through microscopic examination.

In this present study, the histopathological examination of H&E-stained smears of myxoma tissue revealed spindle and stellate mesenchymal/fibroblast cells arranged in interwoven bundles, alongside slender to stellate-shaped pale-staining cells set within a myxoid matrix (Figure 4). While cellular pleomorphism was evident, the presence of mitotic figures was not observed. Myxoma cells can be identified by their star-like shape, featuring three or more extensions and a plump nucleus, along with an abundance of mucopolysaccharide-rich myxoid matrix (Figures 4). In contrast, fibroma cells were characterized by elongated nucleus encompassed by two extended ends (Figure 5).

The precise etiology underlying the occurrence of myxoma and fibroma in female dogs remains uncertain, though it is conjectured to involve genetic factors. Some dog breeds like Labrador Retrievers, Boxers, and Golden Retrievers exhibit higher susceptibility to myxoma as compared to others. Other predisposing factors include a compromised immune system, old age, imbalances in hormonal levels, particularly an excess of estrogen. Furthermore, exposure to specific environmental pollutants might elevate the likelihood of their formation.

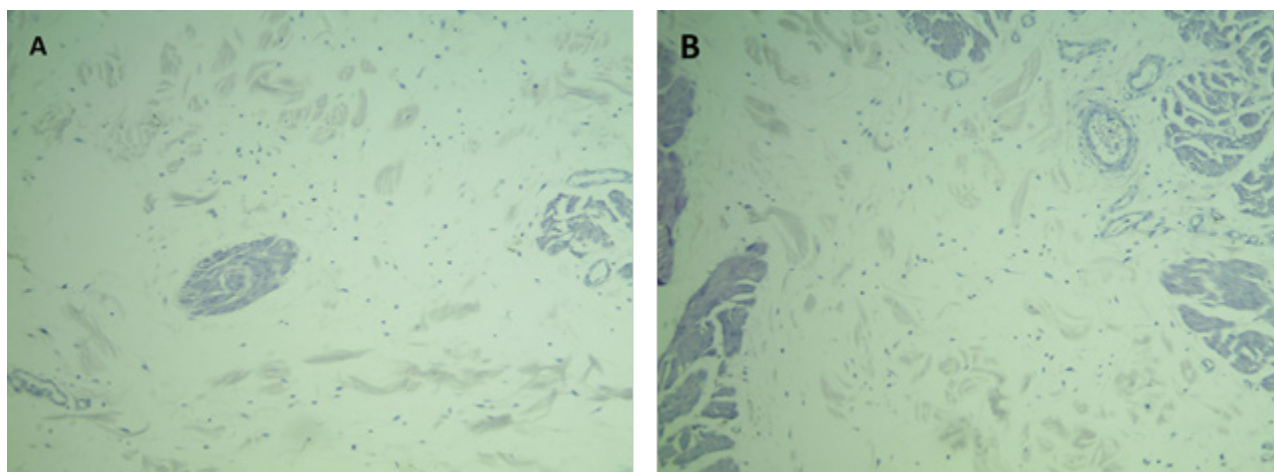


Fig. 4: A & B: Myxoma stained with H&E stain (100x) Mesenchymal cells entangled in abundant myxomatous matrix around muscle fibres.

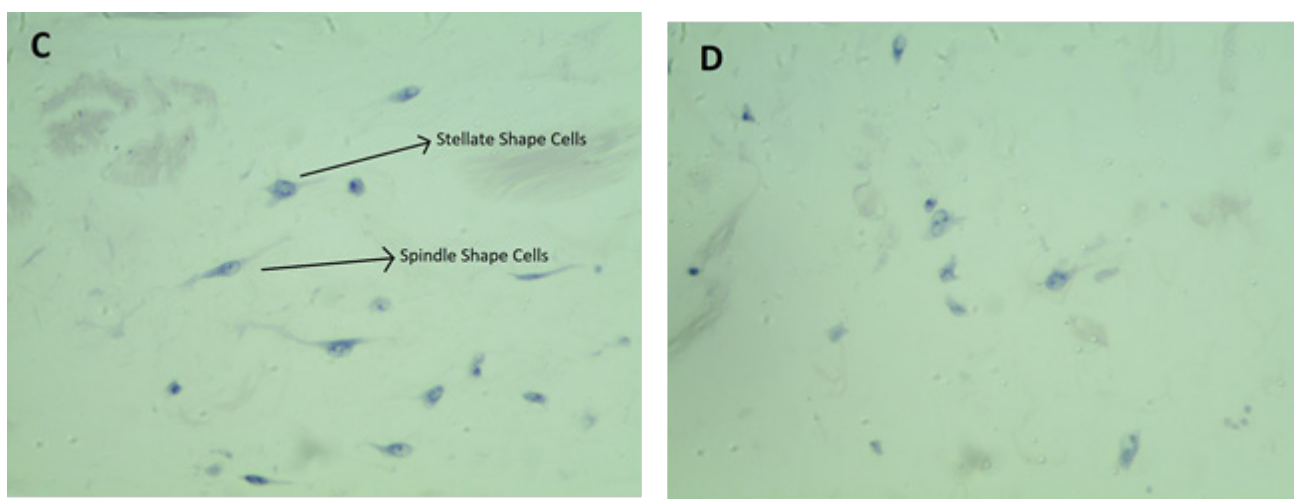


Fig. 4: C & D: Myxoma stained with H&E stain (400x), Spindle and stellate shaped cells embedded in a myxoid intercellular matrix having plump nucleus.

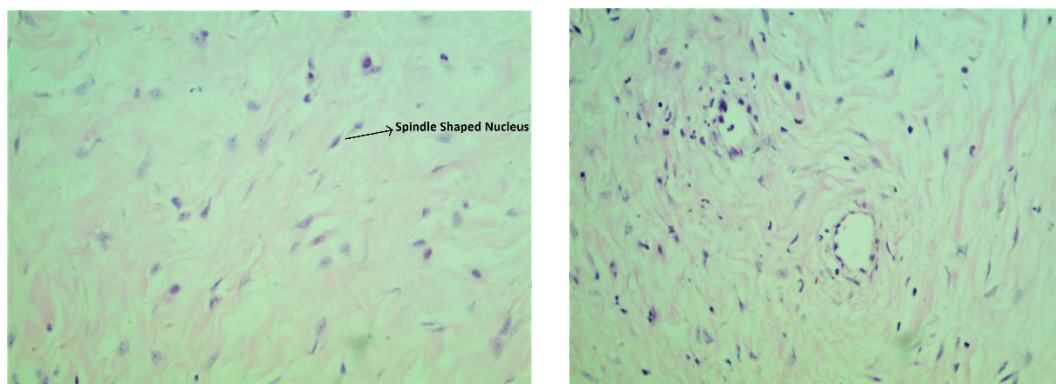


Fig. 5. Fibroma showing stellate shaped cells with elongated nucleus (H&E stain, 400x)

Though surgical excision is the treatment of choice but management of these vaginal tumours can also encompass procedures like episiotomy or, in some cases, necessitate more aggressive interventions such as vaginectomy, urethroplasty, and ventral pelvic osteotomy (Balamurugan and

Sivasudharsan, 2021). Timely diagnosis and treatment not only facilitate the swift recovery of the dog but may also aid in averting progression towards malignancy (Gajendirane *et al.*, 2023). The uneventful recovery in the cases under report may be due timely diagnosis and surgical management.

CONCLUSIONS

Myxoma and fibroma present similar gross signs but can be distinguished through histopathological examination. Myxoma, characterized by large mesenchymal cells entangled in a myxomatous matrix around muscle fibers, contrasts with fibroma, displaying stellate-shaped cells with elongated nuclei. Early diagnosis and treatment can ensure a smooth recovery, preventing malignancy. Surgical intervention for tumor removal in these cases showed no signs of recurrence, indicating surgery as an effective treatment method.

CONFLICT OF INTEREST

The authors have no conflict of interest in this study.

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