CASE REPORT

Surgical Management of Neurofibroma with Cystic Endometrial Hyperplasia in a Labrador Female Dog

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Canine genital tumours are rare, accounting for 3.0-4.0% of all tumours, and primarily affect intact females, with most occurring in the vagina and vulva rather than the uterus (8:1 ratio) (Thacher and Bradley, 1983). Most vaginal tumours (73-94%) are benign and reported occasionally (Salomon *et al.,* 2004; Balamurugan and Sivasudharsan, 2021). Typical clinical signs include a visible protruding mass, vulvar discharge, dysuria, and tenesmus (Withrow and Susaneck, 1986). Some vaginal tumor may be treated with aglepristone or vincristine sulphate, and surgical approaches include episiotomy and excision of the tumorous mass, or more aggressive procedures such as vaginectomy, urethroplasty, and ventral pelvic osteotomy (Salomon *et al*., 2004; Rollon *et al*., 2008; Verma *et al*., 2019). Ovariohysterectomy may be performed to prevent recurrence of the tumourous mass, which may be due to hormonal imbalance.

The cystic endometrial hyperplasia/pyometra complex is a severe, poly-systemic diestrual disorder of intact bitches, characterized by endometrial hyperplasia and inflammatory cell infiltration (Veiga *et al.,* 2017). The pathogenesis is multifactorial, involving abnormal uterine responses to progesterone and estrogen (De Bosschere *et al.,* 2001), IGF-1-stimulated endometrial growth, matrix metalloproteinase-mediated remodelling and *Escherichia coli* colonization via specific endometrial receptors (Schlafer and Gifford, 2008). While CEH and pyometra can present as distinct disorders (Hagman *et al.*, 2009), hyperplastic secretory activity frequently results in sterile fluid accumulation (mucometra/hydrometra) or bacterial pyometra. Affected bitches commonly present with inappetence, vomiting, polyuria/polydipsia, and abdominal distension (Smith, 2006). Ultrasonography confirms the diagnosis, and total ovariohysterectomy (OHE) is the treatment of choice; medical management with prostaglandin F2α carries a risk of uterine rupture or recurrence (Gobello *et al.*, 2003; Gumber *et al.,* 2010). Local surgical excision via episiotomy, coupled with ovariohysterectomy (OHE), is curative for benign genital tumours and prevents recurrence. The present document reports case of a bitch with a neurofibroma along with CEH that was successfully managed surgically.

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Case History and Observations

An 8-year-old Labrador bitch was presented to the Veterinary Clinical Complex, College of Veterinary Science and Animal Husbandry, Kamdhenu University, Deesa (Palanpur, India), with a one-month history of foul-smelling, brownish vaginal discharge. The history revealed anorexia, tenesmus, dysuria, excessive vulvar licking, haematochezia, hindlimb weakness or trembling during walking, gradual loss of sensation in the hindlimbs, and nocturnal vocalization. Initially, we managed the case with an anticancer agent (vincristine sulphate), systemic antibiotics, nervine tonics, and supportive therapies, but the condition deteriorated, leading to lateral recumbency.

Physical examination at this stage revealed a swollen vulva, abnormal vaginal discharge, and hypersalivation; vital signs were within normal limits (rectal temperature: 101.7°F). Transvaginal digital palpation identified multiple firm, variable-sized masses beneath the vaginal wall, along with pendulated masses within the vaginal passage (Fig. 1). Vaginal cytology showed a high density of degenerative neutrophils alongside parabasal and intermediate epithelial cells. Ultrasonography revealed a hypoechoic uterus with anechoic areas, indicative of fluid accumulation. Haematological analysis indicated leukocytosis and neutrophilia, while biochemical parameters showed mildly elevated blood urea nitrogen and aspartate

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aminotransferase levels. Based on the clinical history and findings, a case of cystic endometrial hyperplasia concurrent with vaginal tumors was diagnosed and decided to manage by ovariohysterectomy (OHE) and removal of the vaginal mass using different surgical approaches.



Fig. 1: Pendulated vaginal mass observed through the vulvar orifice of a Labrador bitch

Surgical Management and Discussion

The bitch was operated for an ovario-hysterectomy under general anaesthesia using routine pre-medications and surgical procedure. The uterus was found mildly enlarged and discoloured, with cystic changes in both ovaries (Fig. 2). Thereafter, three palpable, pendulous, tumorous masses of different sizes (L x W; 2.8 × 2.0 cm, 1.5 × 1.0 cm, 0.8 × 0.5 cm) were removed transvaginally after applying two artery forceps and cutting with a BP blade (Fig. 3). Another large tumorous mass (L x W; 3.5 × 2.0 cm) beneath the vaginal wall was removed by a left-sided paravulvar incision (Fig. 4). The gross appearance of the retracted tumorous masses was variable, with size ranging from round to oval, encapsulated, and multiple masses located in the vaginal passage (intraluminal) and beneath the vaginal wall (extraluminal) (Fig. 5). The bitch was treated with antibiotics (Injection Intacef-Tazo 562.50 mg), an analgesic (Melonex 1.5 mL), and multivitamins (Eldervet 3 mL) intravenously in normal saline fluid therapy for five consecutive days. The bitch showed an uneventful recovery, gradually improving over 2 months.

Histopathologic evaluation of slides from tumor masses stained with hematoxylin and eosin (H&E) revealed moderate cellularity with spindle-shaped neoplastic cells arranged in short, interlacing bundles within thin collagen (Schwann cell). Neoplastic cells had poorly defined, pale



Fig. 2: Slightly enlarged and discoloured uterus with cystic changes in both ovaries



Fig. 3: Removal of tumorous mass through transvaginal approach.

eosinophilic cytoplasm and elongated, wavy, tapering nuclei (Fig. 6). These features were compatible with the Antoni type A pattern seen in human schwannomas. Thus**,** the tumour was diagnosed as a neurofibroma.

Cystic endometrial hyperplasia-pyometra complex is a prevalent, hormone-driven inflammatory disorder affecting nearly 25% of intact bitches before 10 years of age (MacLachlan and Kennedy, 2002). The clinical signs observed in this case, including anorexia, abdominal distension, and purulent vaginal discharge, align with classic systemic manifestations secondary to severe uterine wall inflammation (Younis *et al.,* 2014). Pathophysiologically, progesterone drives endometrial hyperplasia, while estrogen upregulates uterine progesterone receptors (Hardy and Osborne, 1994). This hormonal priming, combined

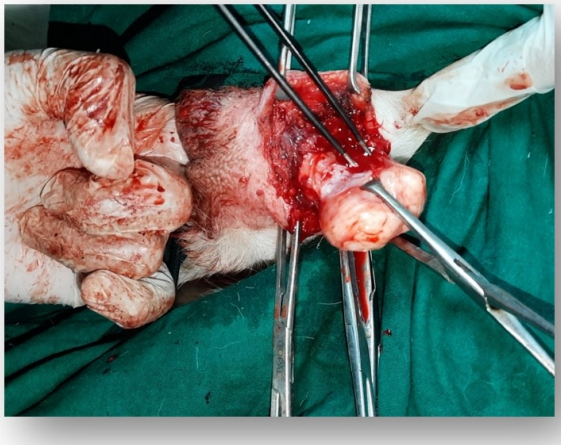


Fig. 4: Removal of tumorous mass through paravulvar approach

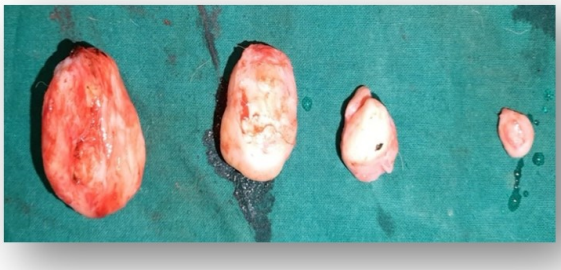


Fig. 5: Gross appearance of different-sized retracted tumorous masses

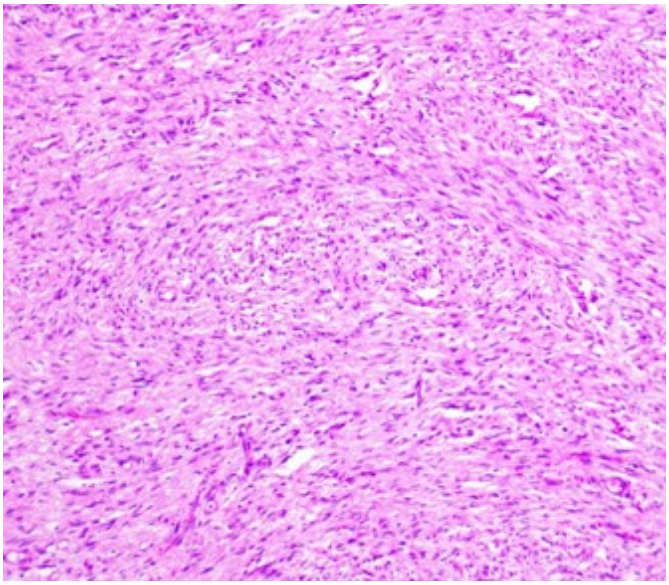


Fig. 6: Microscopic view of a neurofibroma vaginal tumour

with localized endometrial irritation, stimulates growth factors such as IGF-I, which exert a potent mitogenic effect that accelerates cystic endometrial changes (De Cock *et al.,* 2002). Steroid hormonal therapy may be believed to play a role in the pathogenesis of vaginal tumors, although a true cause-and-effect association has not been proven (Rollon *et al*., 2008). Extraluminal and intraluminal tumours of the lower reproductive tract may obstruct the urethra and rectum and sometimes interfere with natural breeding and whelping, and are associated with dystocia (Al-Kenanny *et al*., 2013; Gupta *et al*., 2014). In contrast, in the present case, the bitch showed hind limb weakness and a paralytic effect.

Concurrently, the presence of a vaginal neurofibroma highlights a rare presentation of canine reproductive neoplasia. While canine vulvovaginal tumours are often influenced by chronic hormonal exposure (MacLachlan and Kennedy, 2002), benign peripheral nerve sheath tumours (PNSTs) like neurofibromas are exceptionally rare in this location (Thacher and Bradley, 1983; Sontaş *et al.,* 2010). Similar to the present findings of a neurofibroma, leiomyomas can be single or multiple and intraluminal or extraluminal. Large masses may protrude through the vulva, or extraluminal masses may cause perineal swelling. Perineal swelling was not observed in the present case, possibly due to early detection of tumours masses. As demonstrated in this patient, surgical extirpation via a dorsal episiotomy remains the definitive, highly curative treatment for extraluminal vaginal masses, yielding excellent long-term prognoses (Rollon *et al.,* 2008; Withrow *et al.,* 2013). Similarly, in the present case, surgical excision of the tumour masses and ovariohysterectomy were performed, which were beneficial to the bitch and helped cure the condition.

In brief, early diagnosis and surgical intervention for CEH in the presence of concurrent neoplastic conditions may reduce risks and improve outcomes in canine patients.

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References

Al-Kenanny, E. R., Hayani, O. H., & Annaz, M. H. (2013). Vaginal fibrosarcoma in a bitch: A case report. *Iraqi Journal of Veterinary Sciences, 27*(2), 119–121.

Balamurugan, B., & Sivasudharsan, L. (2021). Surgical correction of vaginal fibroma in a Spitz she dog. *The Haryana Veterinarian, 60*(2), 307–308.

De Bosschere, H., Ducatelle, R., Vermeirsch, H., Van Den Broeck, W., & Coryn, M. (2001). Cystic endometrial hyperplasia-pyometra complex in the bitch: Should the two entities be disconnected? *Theriogenology, 55*, 1509–1519.

De Cock, H., Ducatelle, R., Tilmant, K., & De Schepper, J. (2002). Possible role for insulin-like growth factor-I in the pathogenesis of cystic endometrial hyperplasia-pyometra complex in the bitch. *Theriogenology, 57*(9), 2271–2187.

Gobello, C., Castex, G., Klima, L., Rodryguez, R., & Corrada, Y. (2003). A study of two protocols combining aglepristone and cloprostenol to treat open cervix pyometra in the bitch. *Theriogenology, 60*, 901–908.

Gumber, S., Springer, N., & Wakamatsu, N. (2010). Uterine endometrial polyp with severe hemorrhage and cystic endometrial hyperplasia-pyometra complex in a dog. *Journal of Veterinary Diagnostic Investigation, 22*(3), 455–458.

Gupta, P., Gupta, A. K., Kushwaha, R. B., Dwivedi, D. K., & Sharma, A. (2014). Urethral and rectal obstruction caused by vaginal tumour in a bitch. *The Indian Veterinary Journal, 91*(4), 79–80.

Hagman, R., Rönnberg, E., & Pejler, G. (2009). Canine uterine bacterial infection induces upregulation of proteolysis-related genes and downregulation of homeobox and zinc finger factors. *PLoS ONE, 4*, 1–14.

Hardy, R. M., & Osborne, C. A. (1994). Canine pyometra: Pathophysiology, diagnosis and treatment of uterine and extra-uterine lesions. *Journal of the American Animal Hospital Association, 10*, 245–268.

MacLachlan, N. J., & Kennedy, P. C. (2002). Tumors of the genital system. In D. J. Meuten (Ed.), *Tumors in domestic animals* (4th ed., pp. 547–573). Iowa State University Press.

Rollon, E., Millan, Y., & Martin de Las Mulas, L. (2008). Effects of aglepristone, a progesterone receptor antagonist, in a dog with a vaginal fibroma. *Journal of Small Animal Practice, 49*, 41–43.

Salomon, J. F., Deneuche, A., & Viguier, E. (2004). Vaginectomy and urethroplasty as a treatment for non-pedunculated vaginal tumours in four bitches. *Journal of Small Animal Practice, 45*(3), 157–161.

Schlafer, D. H., & Gifford, A. T. (2008). Cystic endometrial hyperplasia, pseudo-placentational endometrial hyperplasia, and other cystic conditions of the canine and feline uterus. *Theriogenology, 70*, 349–358.

Smith, O. F. (2006). Canine pyometra. *Theriogenology, 66*, 610–612.

Sontaş, B. H., Altun, E. D., Guvenc, K., Arun, S. S., & Ekici, H. (2010). Vaginal neurofibroma in a hysterectomized poodle dog. *Reproduction in Domestic Animals, 45*, 1130–1133.

Thacher, C., & Bradley, R. L. (1983). Vulvar and vaginal tumors in the dog: A retrospective study. *Journal of the American Veterinary Medical Association, 183*, 690–692.

Veiga, G. A., Miziara, R. H., Angrimani, D. S., Papa, P. C., Cogliati, B., & Vannucchi, C. I. (2017). Cystic endometrial hyperplasia-pyometra syndrome in bitches: Identification of hemodynamic, inflammatory, and cell proliferation changes. *Biology of Reproduction, 96*, 58–69.

Verma, N. K., Singh, R., Pathak, M., Agrawal, A., Patel, S. K., & Singh, A. (2019). Surgical resection of multiple vaginal fibrosarcoma in an intact female dog. *Theriogenology Insight, 9*(3), 87–91.

Withrow, S. J., & Susaneck, S. J. (1986). Tumours of the canine female reproductive tract. In D. A. Morrow (Ed.), *Current therapy in theriogenology* (2nd ed., pp. 525–527). W. B. Saunders.

Withrow, S. J., Vail, D. M., & Page, R. L. (2013). Tumors of the female reproductive system. In S. J. Withrow, D. M. Vail, & R. L. Page (Eds.), *Withrow and MacEwen's small animal clinical oncology* (5th ed., pp. 532–538). Elsevier Saunders.

Younis, M., Mohammed, F. F., Ragab, R. S., & Gohar, H. M. (2014). Ultrasonography and pathological evaluation of cystic endometrial hyperplasia-pyometra complex in bitches and queens with related ovarian alterations. *Global Veterinaria, 13*, 60–67.