Case Report

Chronic hemorrhagic mucopurulent vaginal discharge in an ovariectomized/hysterectomized dog caused by a foreign body

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Abstract

Purulent vaginal discharge in dogs can originate from several causes (e.g. infections, neoplasia, anatomical defects, or foreign bodies). Vaginal foreign bodies are rare but clinically important, often leading to chronic mucopurulent or hemorrhagic discharge. Among the common foreign bodies in small animals, grass awns may induce abscesses, granulomas, or chronic inflammation. After migration, they are usually identified in subcutaneous tissues, ears, or body cavities but rarely in the genital tract. This case report describes a rare instance of chronic hemorrhagic mucopurulent vaginal discharge due to a long-retained grass awn in an ovariectomized/hysterectomized dog. Diagnosis was made based on thorough clinical workup, vaginal cytology, and ultimately confirmed by vaginoscopy; foreign body removal resulted in complete resolution of clinical signs.

Keywords: Female dog, vaginitis, vaginal discharge, foreign body, grass awn, vaginoscopy

Background

Chronic vaginal discharge in ovariectomized/ovariohysterectomized dogs is often a frustration to owners and veterinarians due to its multifactorial origin and frequent recurrence. Etiologies are diverse, including bacterial or fungal infections, vaginal neoplasia, urinary tract infections (UTI),[1] congenital or acquired anatomical defects, uterine infection, uterine neoplasia, ovarian remnant syndrome (ORS), and less frequently foreign bodies.[2-4] Identifying the root cause is essential for selecting the appropriate therapeutic approach and avoiding unnecessary or ineffective treatments (Table 1). Differential diagnoses (Table 2) should also include vaginitis and exogenous estrogen exposure as potential causes of mucopurulent hemorrhagic discharge. For instance, ORS is a notable cause of recurrent estrous signs and vaginal discharge in ovariohysterectomized dogs.[5,6] Although relatively uncommon, ORS results from incomplete removal of ovarian tissue during ovariectomy/ovariohysterectomy. Remaining ovarian tissue may become hormonally active, resulting in estrogen-related changes in vaginal epithelium and secretion. Discharge associated with ORS is often serosanguinous or hemorrhagic and additional signs may include vulvar swelling and behavioral estrus. Differential diagnosis of ORS includes systemic exposure to exogenous estrogens; a treatment used for menopausal symptoms in women, often in the form of creams, leading to estrogenic stimulation in companion animals sharing close contact with their owners.

Among the more atypical but important causes of vaginal discharge are vaginal foreign bodies.[6] These are rarely reported, but may go undetected for long intervals, causing chronic inflammation, infection, and discharge. Grass awns (also known as foxtails) are a notable example, capable of penetrating mucosal surfaces and migrating through soft tissues. Their barbed structure promotes unidirectional migration, making spontaneous expulsion nearly impossible.[7] Although most frequently associated with the external ear canal, interdigital spaces, thoracic cavities, nasal cavity, oropharynx/tonsillar crypts, or prepuce, grass awns can reach the genital tract and become a source of persistent irritation and infection. Grass awns are barbed seed structures with a unidirectional surface anatomy that facilitates migration through mucosa and soft tissues. They can enter vulva when the female rubs her perineum on the grass; these sharp bodies can easily enter the skin and/or the vulvar cast and end up in the vaginal vestibule. From this moment on, with possible vaginal contractions, these foreign bodies can migrate cranially causing inflammatory reaction.

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Citation: Clinical Theriogenology 2025, 17, 13005, http://dx.doi.org/10.58292/CT.v17.13005

Table 1. Differential diagnoses of vulvar discharge in ovariohysterectomized dogs

Cause	Common signs	Diagnostic tools	Vaginal cytology findings
Urinary tract infection	Dysuria, pollakiuria, hematuria	Urinalysis after cystocentesis, culture	Neutrophils, RBCs
ORT	Estrous signs, discharge	hormone assays (AMH, LH P_4), ultrasonography	Superficial epithelial cells if dog is in estrus
Vaginal foreign body	Persistent discharge	Vaginoscopy, ultrasonography	Neutrophils, few epithelial cells, RBCs
Vaginal neoplasia	Mass, discharge, dysuria	Ultrasonography (vaginoscopy), biopsy	Depends on tumor type
Uterine contaminations and neoplasia	Discharge polyuria, polydipsia, altered general condition, mass	Ultrasonography, cranial vaginal culture, vaginal cytology	Neutrophils, epithelial cells
Exogenous estrogen exposure	Swollen vulva, discharge	Owner history, cytology	Cornified epithelial cells

Table 2. Differential diagnoses for chronic vulvar discharge in ovariectomized dogs (summarizes the principal differential diagnoses of chronic vulvar discharge) highlighting the importance of a systematic diagnostic approach combining ultrasonography, vaginal cytology, and endoscopic examination)

Differential diagnosis	Frequency/ relevance	Key clinical signs	Diagnostic Tools	Vaginal cytology findings	Treatment approach
Urinary tract infection	Common	Pollakiuria, hematuria	Urinalysis, urine culture	Neutrophils, RBCs	Antibiotics based on culture
ORS	Occasional	Heat signs, swelling, discharge	Vaginal cytology, hormonal assays, ultrasonography	Superficial epithelial cells	Surgical removal of remnant
Exogenous estrogen exposure	Rare	Vulvar swelling, discharge	Owner history, vaginal cytology	Cornified epithelial cells	Remove source of estrogen
Foreign body (e.g. grass awn)	Rare but important	Chronic discharge, no systemic signs	Vaginoscopy, ultrasonography	Neutrophils, few epithelial cells	Endoscopic or surgical removal
Vaginal neoplasia	Uncommon in young ovariohysterectomized dogs	Mass effect, discharge, dysuria	Digital examination, ultrasonography, biopsy	Variable: based on tumor type	Surgical excision ± oncology follow-up
Vaginal trauma/ laceration	Occasional	Recent trauma, discharge	Vaginal examination, vaginal cytology	RBCs, neutrophils	Wound care, local antibiotics
Uterine contaminations and neoplasia	Exceptional except for ORS or exogenous estrogens	Discharge, polyuria-polydipsia, affecting the general condition of the female, mass	Ultrasonography, vaginal cytology	Neutrophils, epithelial cells	Removal of the uterus
Cervicitis without ORS	Rare	Chronic discharge	Vaginal examination, histopathology	Degenerative neutrophils, erosion	Surgery (stump removal), antibiotics

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Advanced diagnostic techniques, including vaginoscopy and ultrasonography are necessary to detect foreign bodies. We describe a case of chronic vaginal discharge in an ovariectomized/hysterectomized dog caused by a grass awn retained within the vaginal canal that was diagnosed using vaginoscopy and treated successfully via endoscopic removal.

Case presentation

A 14-year, mixed breed, ovariectomized dog (at 1 year of age), appropriately vaccinated and dewormed quarterly, was presented with a 1-year history of recurrent hemorrhagic mucopurulent vaginal discharge. According to the owner, the discharge was intermittent, mildly malodorous, and occasionally blood-tinged. There were no signs of systemic illness, fever, weight loss, or behavioral changes.

General physical examination, including rectal temperature, cardio-respiratory auscultation, mucous membrane color, capillary refill time, and hydration status, were within normal limits. Hematological and biochemical parameters were unremarkable. Empirical treatment with oral meloxicam (0.1 mg/kg) for 3 days and oral amoxicillin (10 mg/kg) for 7 days resulted in temporary improvement in vaginal discharge.

At initial presentation, examination of the genital tract revealed a pink, seromucus, nonodorous vaginal discharge at the lower commissure of the vulvar labia. Vulvar mucosa appeared congested and edematous; abdominal palpation was unremarkable. Vaginal smear stained with RAL 555 (eosin and methylene blue) demonstrated a low cellularity smear composed primarily of parabasal cells and numerous neutrophils, suggesting an inflammatory but nonestrogenic environment. Digital vaginal examination revealed an irregular, somewhat thickened vaginal wall.

Urinalysis was performed to exclude UTI as a differential diagnosis; specific gravity was 1.02, pH was 6, red blood cells (RBCs) > 100,000/ml (reference: < 10,000/ml), leukocytes 16,500/ml (reference: < 10,000/ml), and urine culture was negative. Additional recommended diagnostics such as CBC, serum biochemistry, and coagulation profile had been performed by the referring veterinarian prior to referral and the results were within physiological limits. However, hormonal assays (antimüllerian hormone hormone [AMH], luteinizing hormone [LH], and progesterone [P_4]) were not performed due to financial constraints of the owner.

Transabdominal ultrasonography revealed an atrophic uterus consistent with ovariectomy. However, the cervix appeared hypertrophied with a slightly dilated canal containing a small volume of fluid. No obvious ovarian tissue nor urinary bladder abnormalities were noted. On ultrasonography, cervical lumen contained a small amount of anechoic fluid, consistent with sterile exudate.

Treatment

Additional diagnostics such as digital vaginal examination or vaginoscopy were not performed at the initial anesthesia due to client financial limitations and clinical judgment that prioritized surgical sampling.

Surgical intervention via laparotomy and hysterectomy was pursued to obtain histological samples of the reproductive tract and definitively rule out ORS; surgery was uncomplicated according to standard procedures under general anesthesia. Uterus was atrophied with no ovarian tissue at the proximal uterine horns; cervix was markedly thickened. Postoperative recovery was uneventful. Histological evaluation of the cervical tissue confirmed chronic active vaginitis and cervicitis with epithelial erosions and infiltration of inflammatory cells, predominantly neutrophils and lymphocytes.

Clinical signs resolved postoperatively; patient was discharged with oral antiinflammatory medication (robenacoxib 1 mg/kg/day as a single dose for 3 days) and a course of oral antibiotics (amoxicillin-clavulanic acid 10 mg/kg and 2.5 mg/kg, respectively, twice daily for 1 week). Approximately 2 months after the procedure, owner reported recurrence of discharge, now less hemorrhagic but still mucopurulent in nature. The surgical incision site had healed appropriately.

Outcome

Given the recurrence, a detailed reexamination was performed. Vaginal cytology had inflammatory cells with low epithelial cellularity, confirming a state of anestrus. Under general anesthesia, vaginoscopy was performed using a 2.7 mm rigid endoscope with continuous infusion of sterile saline (0.9% NaCl) for vaginal distention. A foreign body (subsequently identified as a grass awn) was lodged in the vestibule, caudal to the urethral opening; object was carefully removed using forceps. Remainder of the vaginal mucosa appeared congested but without ulceration or additional foreign material (Figures 1-4). Foreign body (Figure 5) was removed with 5 French grasping forceps under continuous visualization. Anatomically, this corresponded to the cranial vestibule, near the vaginal junction.

Discussion

The condition began with the onset of vaginal discharge; despite initial management, persistent symptoms led to surgical intervention via hysterectomy (3 weeks later). Clinical signs reappeared within 2 months, prompting further examination. Definitive diagnosis and resolution were achieved in a week, when a foreign body was identified and successfully removed via vaginoscopy. The timeline emphasizes the recurrent and protracted nature of clinical signs prior to accurate diagnosis and appropriate treatment.

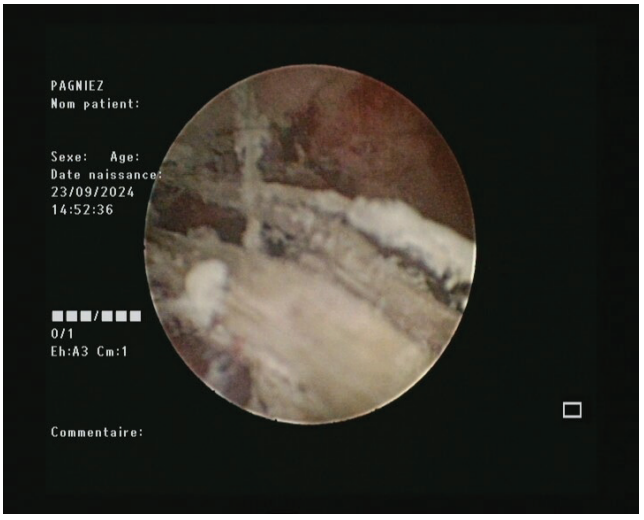

Figure 1. Foreign body in dog's vestibule

This case illustrated the diagnostic complexity and potential chronicity associated with vaginal foreign bodies in dogs. Chronic vaginal discharge in an ovariectomized/hysterectomized dog mandates thorough evaluation, including consideration of rare etiologies. In this case, a retained grass awn was the inciting cause, ultimately diagnosed via vaginoscopy.

Vaginitis can be categorized into juvenile vaginitis that is generally due to a disturbance in vaginal saprophytic bacterial flora before the onset of puberty and/or a vulval malformation in not allowing complete evacuation of urine; adult-onset (usually secondary) is multifactorial, infectious, traumatic, anatomical malformations, or senile vaginitis due to bacterial or viral infections. Adult-onset form often involves chronic irritation or infection and is due to primary or secondary to anatomical abnormalities, neoplasia, endocrine dysfunction, or foreign bodies. The latter, though rare, should always be a differential, especially when standard treatments are unsuccessful. Juvenile vaginitis typically affects prepubertal dogs with mild serous discharge and sometimes mucopurulent discharge, whereas senile vaginitis occurs in older, estrogen-deficient dogs, often with purulent discharge.

Grass awns are common in active dogs with outdoor access. Grass awns are barbed seed structures with a unidirectional surface anatomy that facilitates unidirectional migration through mucosa and soft tissues, causing chronic inflammation, abscesses, or granulomas. Vaginal localization is highly unusual but has been reported.[4,8] Diagnostic delays are frequent due to the nonspecific nature of clinical signs and difficulty in visualizing the entire vaginal tract by standard ultrasonography or radiography.

In our case, hysterectomy had temporarily alleviated symptoms due to partial removal of inflamed tissue but failed to resolve the underlying cause (intravaginal foreign body). Histopathology supported the chronic nature of inflammation, consistent with foreign body reaction. Advanced diagnostics, particularly vaginoscopy, were crucial in this case.[9–11] The use of saline distention improved visualization and facilitated atraumatic removal.

Other important differential diagnoses include estrogenic stimulation from exogenous sources (e.g. creams used by human cohabitants) causing superficial epithelial cell dominance on vaginal cytology; this was excluded due to cytological findings. Based on vaginal cytological, surgical, and histological findings, ORS was ruled out. Vaginal neoplasia (most are estrogen-dependent, e.g. leiomyomas) is uncommon in early ovariectomized dogs and was considered unlikely (Table 1). The discharge associated with ORS is often serosanguinous or hemorrhagic, and additional signs may include vulvar swelling and behavioral estrus.

Conclusion

Retention of a foreign body should always be considered as a differential diagnosis in dogs with chronic or recurrent vaginal discharge, especially when initial treatments fail or there is recurrence after standard therapy. Grass awns are particularly insidious due to their migration capability and resistance to detection by conventional

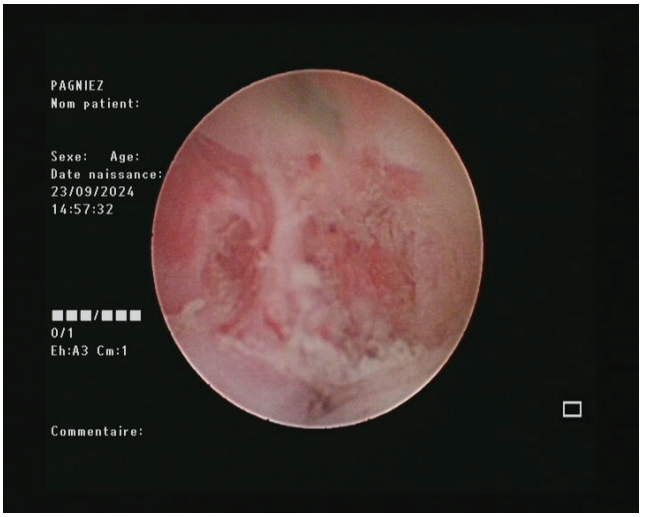

Figure 2. Vaginoscopy image; note vaginal irritation

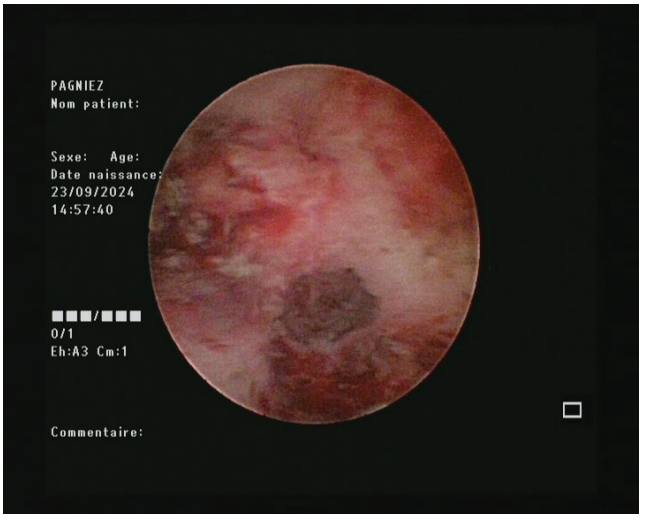

Figure 3. Vaginoscopy image; note vaginal erosion

Figure 4. Foreign body

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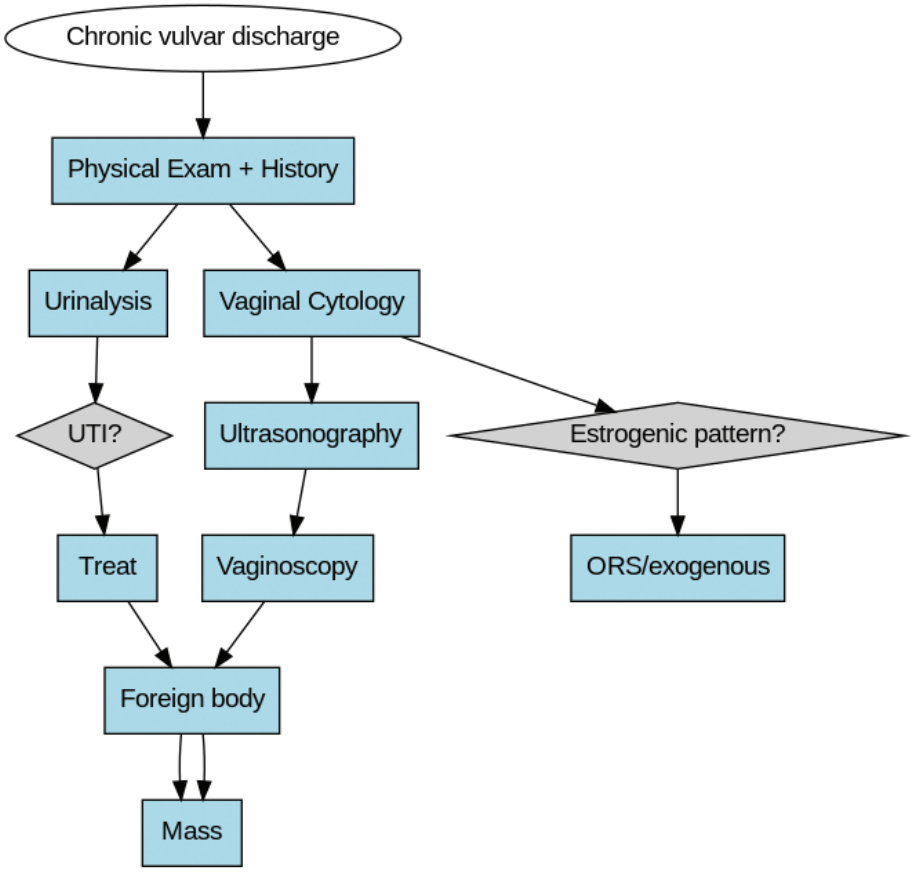

Figure 5. Schematic flowchart illustrating stepwise diagnostic approach for chronic vulvar discharge in ovariectomized/hysterectomized dogs. The algorithm emphasizes the role of clinical examination, hematology and biochemistry, urinalysis, vaginal cytology, and ultrasonography, after vaginoscopy, in order to systematically identify infectious, hormonal, structural, or foreign body causes

ultrasonography. Vaginoscopy allowed direct visualization of the vaginal vault and was diagnostic and therapeutic in this case. In combination with vaginal cytology, histology, ultrasonography, and vaginoscopy enabled an accurate and minimally invasive approach to diagnosis and treatment. Early identification and removal of vaginal foreign bodies prevent chronic inflammation, improve patient quality of life, and avoid unnecessary surgeries. This case highlighted the importance of thorough diagnostic workup and underscored the clinical value of combining vaginal cytology, ultrasonography, and vaginoscopy in unresolved cases.

Learning points

- Chronic or recurrent vaginal discharge in ovariectomized/hysterectomized dogs poses a diagnostic challenge as clinical signs are often subtle and overlap with other urogenital disorders
- Foreign bodies such as grass awns, though rare, should be systematically considered in differential diagnoses, especially in outdoor or long-haired dogs
- Vaginal cytology is a key, noninvasive tool to exclude estrogenic causes (e.g. ORS or exogenous exposure) and to guide further diagnostics
- Ultrasonography can reveal cervical or uterine changes but is insufficient alone to detect distal vaginal foreign bodies
- Vaginoscopy remains the gold standard for direct visualization and removal of intravaginal foreign objects
- Early diagnosis and treatment substantially reduce chronic inflammation, secondary complications, and unnecessary surgeries

Conflict of interest

None to report.

Acknowledgment

Authors thank the clinical team and laboratory technicians at ONIRIS for their contributions

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