



## Gynaecological Disorders in Animals: Exploring Anatomical Structural Perspectives

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### Abstract

Anatomical malformation affecting the reproductive organs in animals can have significant implications for their fertility and overall reproductive health. Gynaecological disorders in animals can often be attributed to various anatomical structural aspects of their reproductive systems and discusses their clinical manifestations, diagnosis, and management strategies. Understanding these structural nuances is crucial for diagnosing and treating such disorders effectively. This article explores common gynaecological disorders in animals and their relationship to anatomical structures.

**Keywords:** Animals; Diagnosis; Health

### Introduction

Animals are susceptible to a variety of gynaecological disorders that can affect their reproductive health and overall well-being. Many of these disorders can be linked to specific anatomical structural aspects of their reproductive systems. Understanding the anatomical basis of these disorders is essential for accurate diagnosis and effective management i.e. treatment and prevention, so that veterinarians can provide more targeted care and supervision for these conditions. In this article, we delve into common gynaecological disorders in animals, exploring their anatomical underpinnings and providing valuable insights for veterinary practitioners and animal caregivers.

### Anatomy of reproductive tract

#### Vulva

The vulva constitutes the external component of the reproductive tract and is responsive to estrogen fluctuations, which dictate the onset of estrus. Detecting estrus is facilitated by the vulva's swelling and reddening, indicative of heightened blood flow, when observed alongside other indicators.

#### Vestibule

Serving as a shared section between the reproductive and urinary systems, the vestibule spans around 4 inches. It features openings leading to the urinary bladder and a pouch called the suburethral diverticulum below the urethral opening. Knowledge of these structures aids dairy producers and AI technicians in preventing inadvertent injury or insemination complications.

#### Vagina

Positioned between the bladder opening and the cervix, the vagina spans roughly 8 inches. It serves as the site for semen deposition during natural mating and facilitates calf birth. Additionally, the vagina acts as a protective barrier against bacterial invasion, secreting fluids that, in conjunction with cervical secretions, inhibit harmful bacterial growth.

#### Cervix

The cervix, situated between the vagina and uterus, measures 4 to 5 inches in length and 1 to 2 inches in diameter. Its primary role is to regulate access to the uterus, featuring protrusions into the vagina that deflect foreign objects, such as insemination rods. The cervix's dense walls and annular folds aid in its functions, includ-

ing serving as a potential site for semen deposition during artificial insemination.

### Uterus

Comprising a “body” and two “horns,” the uterus is suspended within the pelvic and body cavities by the broad ligament. It plays essential roles in sperm transport following insemination and calf expulsion during birth. Furthermore, uterine glands secrete uterine milk, providing nourishment to the developing embryo before and after implantation.

### Oviduct

The oviducts, approximately 10 inches long and 1/4 inch in diameter, connect each ovary to the adjacent uterine horn. The infundibulum, located at the ovarian end, captures the released egg and transports it to the ampulla. These structures facilitate fertilization and early embryo development.

### Ovaries

As the primary reproductive organs, the ovaries are responsible for egg production and hormone secretion, regulating the estrous cycle and pregnancy. Suspended from the broad ligament near the oviduct’s end, each ovary measures about 1.5 inches in length and 3/4 inch in diameter, contributing significantly to the female reproductive process.

## Common gynaecological disorders and anatomical correlations

### Pyometra

Pyometra is a potentially life-threatening condition characterized by the accumulation of pus within the uterus. In female mammals, the anatomical structure of the uterus, particularly its shape and size, can predispose certain species to develop pyometra more frequently than others [3]. For example, animals with a relatively large uterus, such as canids and felids, may be at higher risk due to increased susceptibility to bacterial infection.

### Ovarian cysts

Ovarian cysts are fluid-filled sacs that develop on the ovaries and can interfere with normal reproductive function. The anatomical arrangement of the ovaries and their blood supply can influence the development and persistence of ovarian cysts in animals. In horses, for instance, the presence of large antral follicles and the absence of luteinizing hormone surge may contribute to the formation of cystic structures [1].

### Uterine prolapse

Uterine prolapse is a distressing condition characterized by the protrusion of the uterus through the vagina. This disorder often occurs in animals during or after parturition or excessive straining particularly in species with multiple offspring or large litter sizes. The anatomical structures supporting the uterus, such as the pelvic floor muscles and ligaments, play a critical role in preventing prolapse. Weakness or injury to these supportive structures can predispose animals, particularly large mammals such as cows and ewes, to uterine prolapse [7]. Veterinary interventions aimed at strengthening these supportive tissues and providing timely assistance during labour can mitigate the risk of uterine prolapse.

### Endometritis

Endometritis, inflammation of the uterine lining, can result from various factors, including infection, trauma, or retained placental tissue. The anatomical structure of the uterus, particularly the presence of crypts and folds in the endometrium, can provide an ideal environment for bacterial colonization and persistence [6]. Additionally, impaired uterine clearance mechanisms may contribute to the development of endometritis in animals.

### Uterine torsion

Uterine torsion refers to the abnormal twisting of the uterus around its longitudinal axis, which can lead to obstruction of blood flow and compromised reproductive function. This disorder is commonly observed in large animals such as cattle, horses, and goats [8]. The clinical signs of uterine torsion may vary depending on the degree of rotation and the severity of vascular compromise. Diagnosis typically involves palpation per rectum or ultrasonography, followed by prompt correction of the torsion to restore blood flow and prevent complications [2].

### Vaginal prolapse

Vaginal prolapse occurs when the walls of the vagina protrude through the vulvar opening, often due to increased intra-abdominal pressure during oestrus, late pregnancy or parturition. An understanding of the anatomical structures surrounding the vagina, including the pelvic diaphragm and perineal body, is crucial for managing vaginal prolapse. This condition is more commonly seen in multiparous ewes, cows, and sows [6]. Predisposing factors such as increased intra-abdominal pressure and hormonal influences can exacerbate the risk of prolapse. Vaginal prolapse can lead to discomfort, trauma, and secondary infections if left untreated. Vet-

erinary management strategies typically involve gentle reduction of the prolapsed tissue, followed by supportive care and measures to prevent recurrence [5].

### Testicular torsion

Testicular torsion involves the abnormal rotation of the testis and spermatic cord, resulting in compromised blood flow and ischemia. While more commonly observed in humans, testicular torsion can also occur in animals such as dogs, cats, and horses [4]. Clinical signs include scrotal swelling, pain, and reluctance to move. Prompt surgical intervention is necessary to detorse the affected testis and restore blood flow to prevent permanent damage [9].

### Ovarian torsion

Ovarian torsion involves the rotation of the ovary around its ligamentous attachments, leading to compromised blood flow and potential tissue necrosis. In animals, ovarian torsion may occur spontaneously or result from trauma or underlying anatomical abnormalities. The anatomical configuration of the ovarian ligaments, particularly the broad ligament, influences the susceptibility to torsion. Additionally, factors such as hormonal fluctuations and ovarian cysts can contribute to the development of torsion. Prompt surgical intervention to detorse the ovary and restore blood supply is essential for salvaging ovarian function and preventing complications.

### Cervical stenosis

Cervical stenosis involves the narrowing or obstruction of the cervical canal, impeding normal reproductive processes such as menstruation or parturition. Anatomical abnormalities, inflammatory conditions, or congenital defects can contribute to cervical stenosis in animals. Understanding the anatomical dimensions and structural integrity of the cervix is essential for diagnosing and managing this disorder. Veterinary interventions may include cervical dilation procedures or surgical correction to alleviate cervical obstruction and restore reproductive function.

### Conclusion

- Gynaecological disorders in animals often have underlying anatomical structural aspects that influence their pathogenesis and clinical presentation.
- By elucidating the anatomical structures involved in these disorders, veterinary professionals can devise targeted

approaches for diagnosis, treatment, and prevention to effectively manage such conditions and improve reproductive outcomes in affected animals.

- Continued research and clinical insights into the anatomical aspects of gynaecological disorders will further enhance our ability to promote reproductive health and welfare in animals.

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