

# VAGINOSCOPY IN BITCHES

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Functionally the reproductive tract of the bitch consists of a uterus and a postuterine component, which is composed of cervix, vagina, vestibule, and vulva, and which serves as a birth canal and copulatory organ. Postuterine (PU) endoscopy is a comprehensive term used for endoscopy of the cervix (Colposcopy), vagina (Vaginoscopy), and vestibule (Vestibuloscopy). Endoscopic examination of the uterus is termed hysteroscopy.

Postuterine endoscopy provides the clinician with a method for the immediate assessment of the pathologic and physiologic status of the tract and for diagnostic evaluation. It is a relatively simple procedure, atraumatic and requires only a moderate amount of equipment, assistance, practice and experience. Diagnosis is often immediate and examination time is usually short but the diagnostic yield is high and the information obtained is often positive, confirmatory or eliminative.

## Indications for Postuterine Endoscopy are

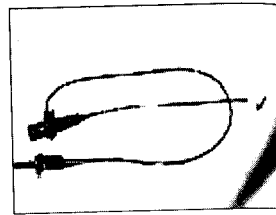
- To predict the time of ovulation and fertile breeding time
- Evaluation of history and clinical signs associated with congenital or acquired abnormalities
- Bleeding inappropriate for the stage of the estrous cycle
- Abnormal vaginal discharge
- Dysuria
- Pain at breeding
- Investigation of infertility
- Management of contraceptive programs
- Evaluation of unduly stressful or prolonged parturition or fetal dystocia
- Readily combined with secondary procedures such as biopsy, reproductive tract fluid aspiration, cellular examination and culture from selected sites
- Artificial insemination in dogs using frozen semen

## INSTRUMENTS USED

Either flexible or rigid fiberoptic endoscopes or paediatric proctoscopes less than 12mm in diameter can be used. Paediatric proctoscopes used as canine

vaginoscopes have the advantages of easy passage through the vagina, as well as lower cost, greater durability and easier maintenance.

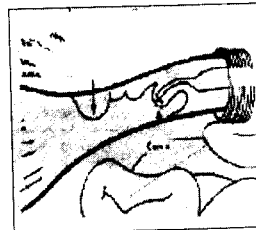
However, flexible fiberoptic endoscopes are ideal because they can be used to examine almost any animal and they provide cool lighting and excellent visualization. They are expensive. Very small bitches and queens may be examined with an otoscope. A cystoscope may also be used.



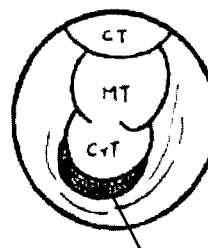
Flexible fibre optic endoscope

## APPLIED ANATOMY OF THE POSTUTERINE TRACT OF THE BITCH

The basic anatomy of the post uterine tract is shown schematically in the figure. The endoscope is inserted nearer the dorsal commissure to avoid the sensitive clitoral fossa and fold, which lie more ventrally. In larger and obese dogs, care must be taken to avoid an overhanging dorsal fold of the vestibular mucosa, which may deflect the scope into the urethral meatus during insertion.



Resistance may be encountered at the region of the cingulum. To enter the vagina from the vestibule, the direction of the endoscope must be changed to the horizontal position. There are four district regions that should be considered when entering the vaginal lumen. The lumen of the paracervix is crescent shaped as a result of the intrusion from its roof of the single longitudinal dorsal median fold (DMF).



Paracervical lumen

A bulbous caudal tubercle (CT) of the DMF delineates it from the mid vaginal mucosa behind. The bulbous DMF tubercles always partially or totally conceal the cervix from the endoscopist and can simulate its profile appearance, forming a so-called pseudocervix. Similarly, care must be taken not to mistake the DMF and tunnel like paracervical lumen for the cervix and its canal. Positive identification of the DMF and tubercles can be made by confirming their ventral relationship to the narrow crescent-shaped paracervical lumen. This may require insufflations. Functionally, the DMF is a reserve tissue required for the adequate expansion of the paracervix during whelping.

Some degree of resistance to passage of the instrumentation can always be expected at the caudal vaginal sphincter (cingulum) and at the level of the caudal tubercle. When encountering areas of resistance, the scope must never be forcibly advanced.

#### PRE-ENDOSCOPY EXAMINATION

After a thorough case history has been obtained and a general physical examination has been completed the reproductive tract is carefully evaluated. The vulva and anogen-ital region are checked for atrophic or confirmation abnormalities. The colour and character of any vulvar discharge are noted. When the purpose of vaginoscopic examination is to advise on cyclical status, vulval labial size and turgidity are noted in addition to character of any vulvar discharge.



Endoscopic examination of reproductive tract

#### EXAMINATION PROCEDURE

All instruments used for vaginoscope should be sterilized. Chemical sterilization is not recommended if swabs for culture are to be obtained. A sterile lubricant is applied prior to insertion.

Moistening the endoscope tip with warm water is adequate for facilitating insertion and minimizing fogging. Any excess water is expelled from the sheath using the insufflator and mopped by a soft

sterile swab. For vestibulscopy, upward elevation of the tail is recommended and viewing and insufflation are begun whenever instrument is passed within the dorsal commissure. Better visualization is often obtained during slow withdrawal of the scope. Normally only steady slight-to-moderate pressure is required to overcome resistance of the caudal vaginal sphincter in intact bitches. A sensation of relaxation or "give" indicates entry of the scope from the vestibule into the vagina.

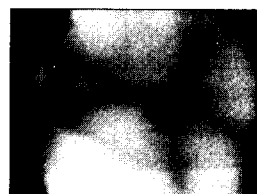
After the scope is fully inserted, the obturator is slowly withdrawn and the mucosa is examined for colour, texture, shape of mucosal folds or any other abnormalities as the scope is slowly withdrawn 1 to 4 cm and then slowly advanced to the original position. Mild insufflation can be induced to attempt exposing the vaginal cervix and to facilitate viewing of vaginal mucosa. Insufflation should be induced only while Viewing through the scope so that the extent to which the resulting view is affected by insufflation can be assessed. An impression of the condition of the vaginal mucosa should be formed early in the examination because continued exposure of mucosa to air will cause mild erythema.

#### CANINE VAGINOSCOPY

The changes in the vaginal mucosa during different stages of the estrous cycle is as follows

**Anestrus:** Mucosal folds are very low, epithelium is thin and due to visibility of underlying microvasculature folds appear red or pink red in colour. The folds appear small, rounded and flaccid.

**Proestrus:** Mucosal folds enlarged and oedematous. Transverse furrows develop and produce in conjunction with longitudinal folds, a smooth, rounded cobble stone pavement surface that appears in the scope as rounded profiles. Colour varies from pink- gray to gray white to cream white and finally to paper white.



**Preovulatory Estrus :** At the time of LH surge there is

Oedematous folds during proestrus progressive shrinkage of the vaginal mucosal folds, accompanied by pallor. These effects are due to abrupt withdrawal of water retaining effect of estrogen during its preovulatory decline. Subsequently, mucosal shrinkage is accompanied by wrinkling with angulation crenulation

and dull cream

to white colour. Mucosal shrinkage with angulation is characteristic of fertile period and mating or insemination must be planned during this period. Vaginoscopic changes are helpful in clinical practice because they are progressive; therefore it is not necessary to examine the bitch each day.

**Diestrus :** Mucosal surface becomes variegated, with patches of white mucosa mixed with patches that are thin and red. Closure of lumen and formation of a rosette of low, soft folds around the closed lumen.



Crenulation of vaginal mucosa

#### **OPTIMUM TIME OF BREEDING/ INSEMINATION BASED ON VAGINOSCOPY**

High rates of successful conceptions have been achieved and can be expected from single inseminations/breedings during the period of shrinkage with angulation. When only a single mating is possible or fertility is suspected, peak fertility is achieved by delaying the matings until the peak fertile period.

#### **INTRAUTERINE INSEMINATION USING ENDOSCOPES**

Intrauterine insemination may be performed surgically with introduction of the semen sample into the uterine body through a small gauge needle via laparotomy, laparoscopy or via transcervical catheterization. Surgical insemination has drawbacks, including the risks associated with general anesthesia and surgery and the fact that only a single insemination is realistic. However, with transcervical insemination the ability to catheterize the cervix routinely and repeatedly is necessary, without undue stress to the bitch providing an opportunity to clinicians to access the intrauterine environment without any surgery.

Transcervical insemination employs a rigid or a Flexible fibre optic endoscope, which is inserted into the vagina and advanced to the level of the cervix. A polypropylene insemination catheter is inserted through the endoscope and directed into the cervical os. This technique requires training before catheterization can be achieved reliably. Some bitches also need to be sedated for the procedure.

Intrauterine Insemination using rigid endoscope



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