

Bovine and Bubaline Infertility- Non-specific Genital affections

Prof G N Purohit

Department of Veterinary Gynecology and Obstetrics

College of Veterinary and Animal Sciences

Rajasthan University of Veterinary and Animal Sciences, Bikaner, Rajasthan India

Include the affections of the various genital organs including ovary, fallopian tubes, uterus, cervix, vagina and vestibule.

- The nonspecific ovarian reasons for infertility in cattle and buffalo include
- Ovaritis, ovarian abscess, ovarian tumors and par ovarian cysts.

Oophoritis / ovaritis

Inflammation / infection of ovary

Causes :

- 1- Secondary to trauma
- 2- infection through uterus
- 3- extension of infection through uterine walls

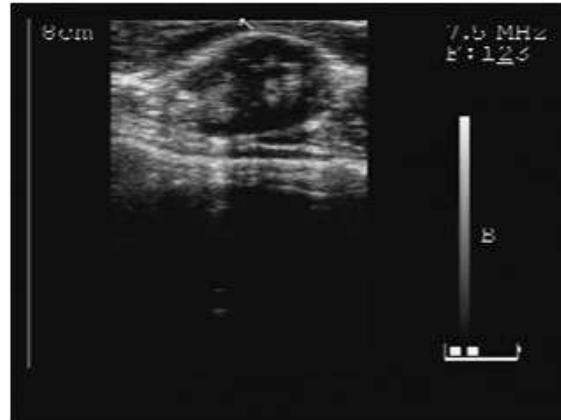
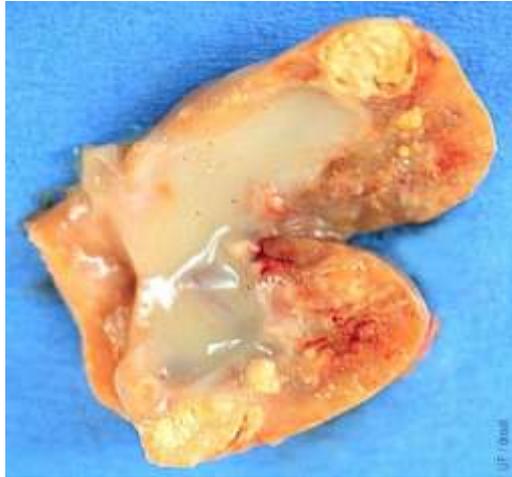


Treatment :

Not easy . Supportive treatment .

If infection extended through uterus treatment of the condition

Ovarian abscess



Ovarian abscess

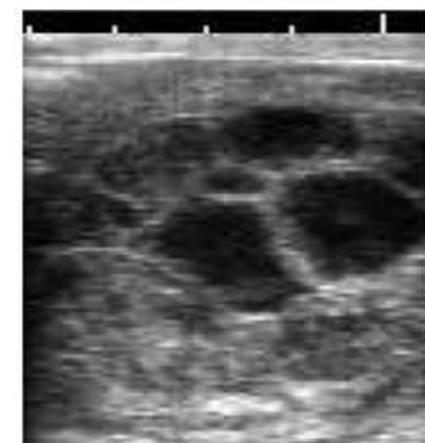
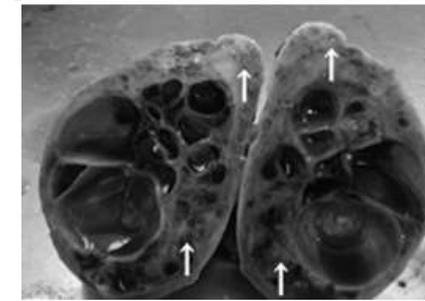
Ovarian tumors

These conditions are infrequent. The common ovarian tumor is **granulosa cell tumor** and animals exhibit signs of altered reproductive cycle (nymphomania) and infertility in such cases.

Most tumors are benign. The progesterone and testosterone levels might be elevated. Plasma inhibin and Anti-mullerian hormone levels are elevated.

Honey comb like structure is visible in cut surface and ultrasonography

Surgical removal by flank celiotomy is suggested if the condition is unilateral



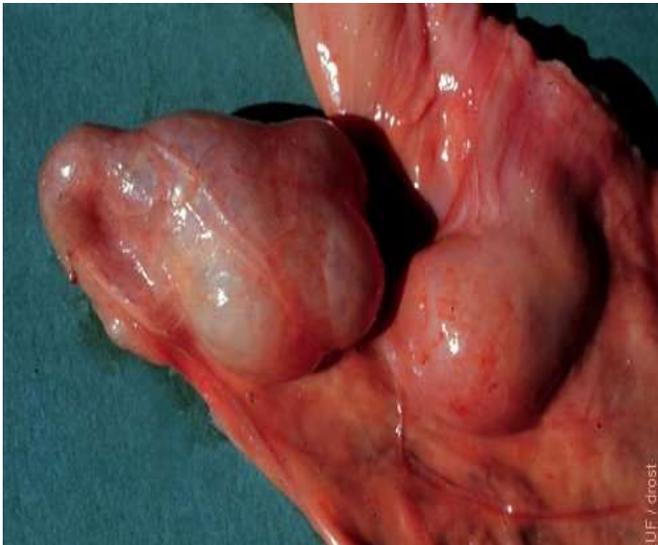
Par-ovarian cysts are occasionally found in the broad ligament. Sometimes located adjacent to the ovary. Less important clinically. Rare reports of anestrus

Serosal cysts may be noted on the ovarian surface.



Oviductal affections

Oviductal affections include **salpingitis** which usually results from passage of the uterine infection in the oviduct. This may also occur following infusion of large volumes of fluid in the uterus. Difficult to be identified clinically



Ovaro-bursal adhesions

Hydrosalpinx/Pyosalpinx

Hydrosalpinx may occur because of anatomic defects and **pyosalpinx** is less common. These problems can rarely be diagnosed by routine rectal palpation and sonography unless the enlargements are extensive. PSP dye test is suggested for testing patency of the oviducts as they may occlude the lumen

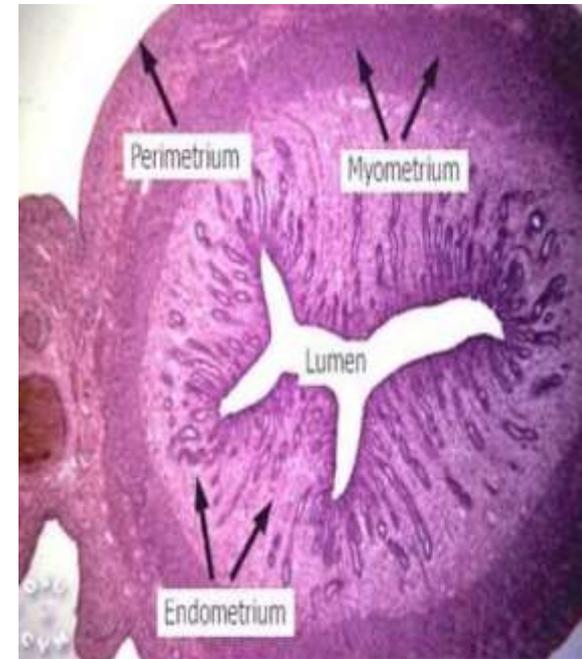


Unilateral and bilateral hydrosalpinx in buffalo



Uterine infections and affections

Uterine infections are one of the most frequent cause of infertility in cattle and buffaloes. The uterine infections manifest in different ways when they occur during the post-partum period which is most frequent in cows. Clinical conditions identified during the post partum period include **puerperal metritis**, **clinical endometritis**, **pyometra** and **sub-clinical endometritis**. Other problems in the uterus include **uterine abscess**, **tumors** and **mucometra** or **hydrometra**



Metritis

- Inflammation of all the layers of the uterus including endometrium and myometrium commonly occurring first 10-21 days postpartum.
- Metritis usually occurs post partum because the genital passage is widely open during this time and bacterial accumulation and elimination occurs largely during this period. Metritis can rarely occur at other times.

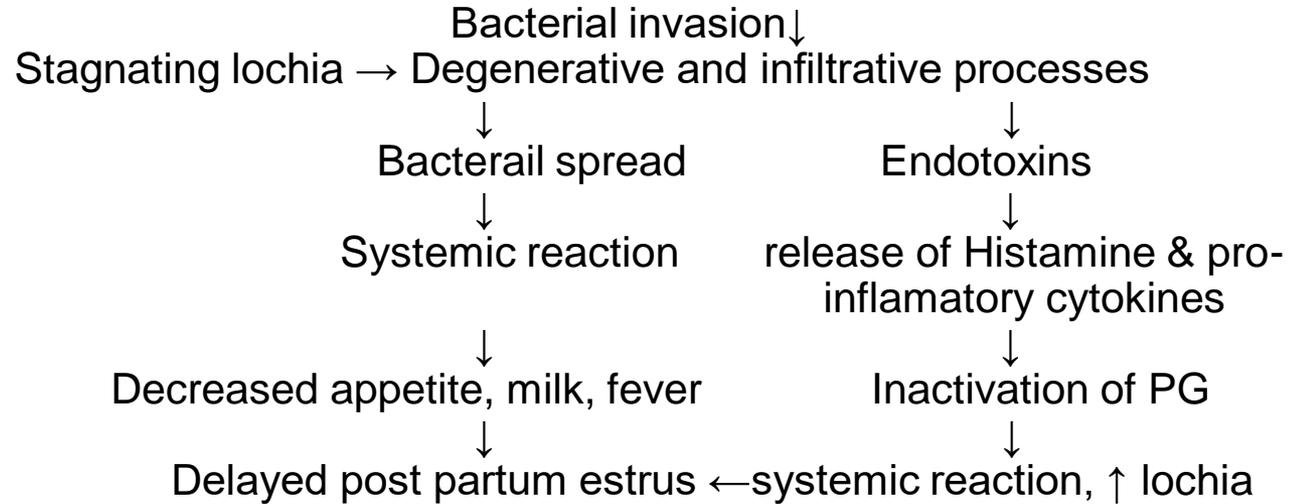
Predisposing factors

- Poor parturient hygiene and peri-parturient reproductive and metabolic problems
- Increasing Age and parity
- Poor feed intake during terminal gestation

Microbes

- E.Coli
- A. Pyogenes
- Fusiformis necrophorus
- Incidence 15% - 20%

Pathogenesis:



Clinical findings

- Animals can develop fever, reduced feed intake and decreased milk production
- Enlarged, atonic uterus
Fetid, watery, red-brown discharge
Signs of systemic disease
Fever (inconsistent)

Toxic puerperal metritis is the severest form of the disease in which symptoms of toxemia appear



Diagnosis

History

Transrectal palpation.

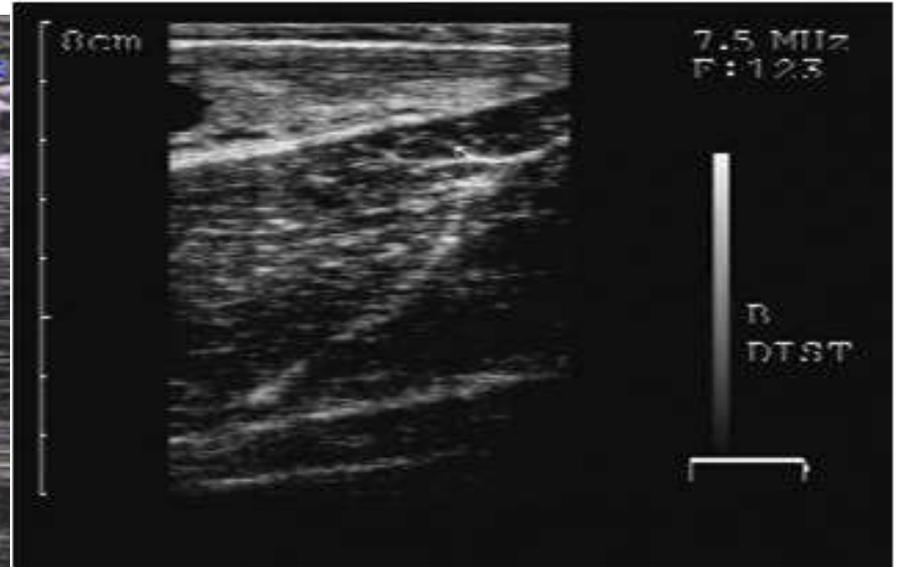
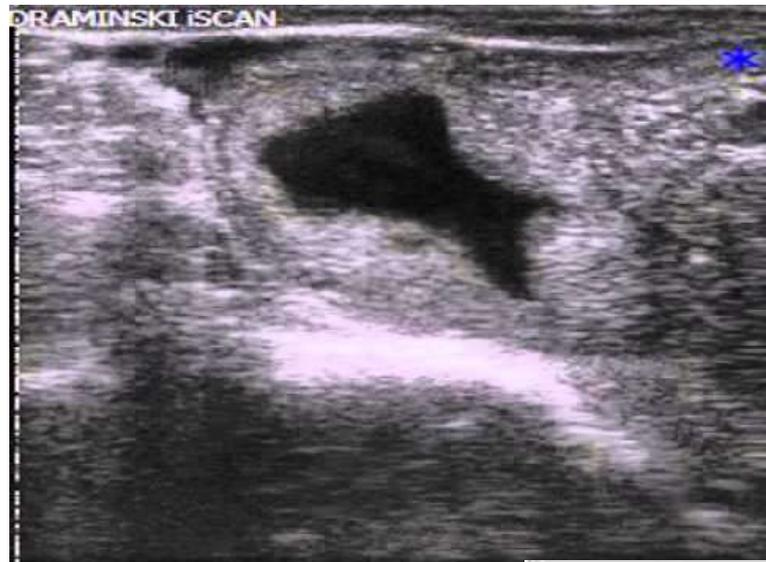
Vaginoscopic examination

Transrectal ultrasonography

White side test



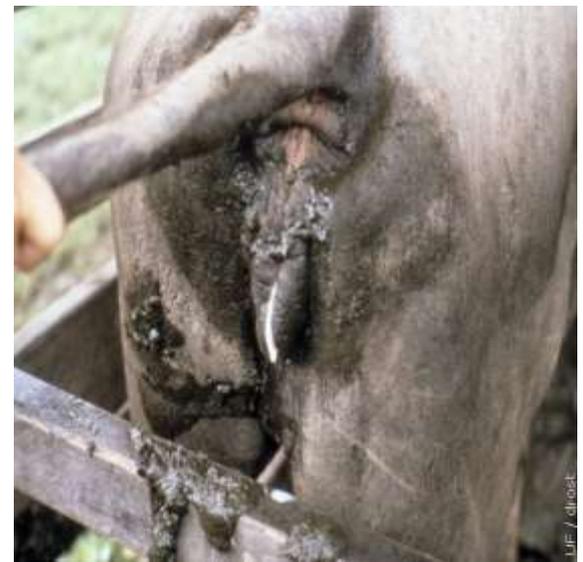
Ultrasonography



Therapy

- Most intrauterine antibiotics are ineffective during the first 10 days post-partum
- Systemic ceftiofur
Ampicillin, Tetracyclines, Gentamicin,
Cephapirin
- Supportive therapy if required
- Antihistaminics and liver tonics
- Antipyretics if fever is present
- Prostaglandins have limited value

Peurperal metritis: is a bacterial complication of early peurperium which occurs during the first 2 weeks of calving and is characterized by a large amount of foul smelling reddish brown putrid watery exudates with necrotic debris, a thin uterine wall or a limited amount of malodorous purulent exudates and a thick uterine wall some days later. Systemic signs may be present including fever, anorexia and drop in the milk yield.



- **Sclerotic metritis**: is caused by a severe chronic metritis that has caused the complete destruction of the endometrium and fibrotic changes in the uterine wall. The endometrium is transformed into a thick, dense layer of connective tissue. The condition often involves the cervix. The condition should be differentiated from adenocarcinoma which it closely resembles. The animal fails to show estrum and the CL is deeply embedded that does not respond to luteolytic drugs.

Consequences of metritis

Reduced milk yield

Delayed conception

Increased risk of endometritis

Increased risk of culling

Pyometra

- Pyometra: Accumulation of pus in the uterus with a persistent CL. This makes the animal anestrus. The condition may occur post-partum when endometritis does not resolve and an animal has ovulation resulting in formation of CL. The condition can occur post-service frequently because of Trichomonas.
- Post service pyometra can occur because of Trichomonas infection.

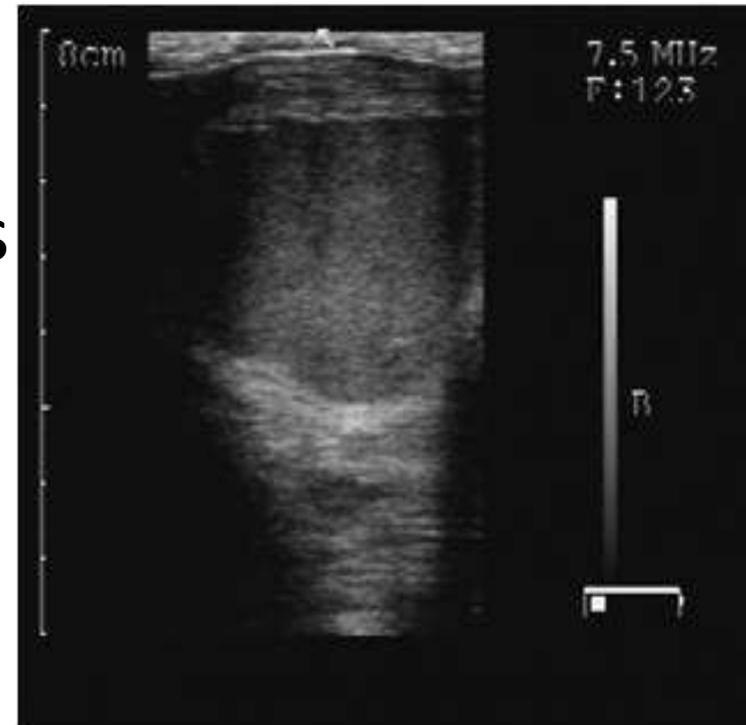
Pyometra



- *T. pyogenes* and *F. necrophorus* are commonly involved during post partum period.
- Cows with clinical endometritis that ovulate commonly develop pyometra due to multiplication of microbes in the presence of an active CL.

Diagnosis

- Palpation of an enlarged uterus
- Discharge of pus in some cows
- Ultrasonography



Therapy

- Prostaglandins
- Uterine lavage using Normal saline
- Imidazole derivatives intra uterine

Endometritis

- Endometritis: Inflammation of the endometrium of the uterus, also frequently occurs post-partum but may occur at other times also subsequent to copulation, poor hygiene at AI and because of re-infection after recovery from metritis.

Endometritis Clinical and subclinical

- Inflammation of endometrium 4-8 weeks post-partum
- Pre disposing factors
 - Abnormal parturition
 - Metritis
 - Negative energy balance
 - Peri-parturient disease- vaginal prolapse
 - Poor hygiene at breeding, insemination or parturition.

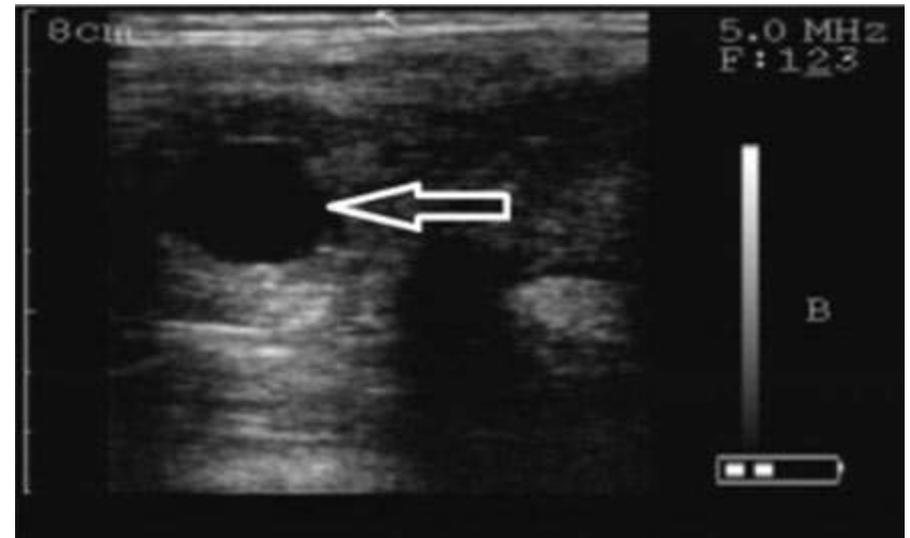
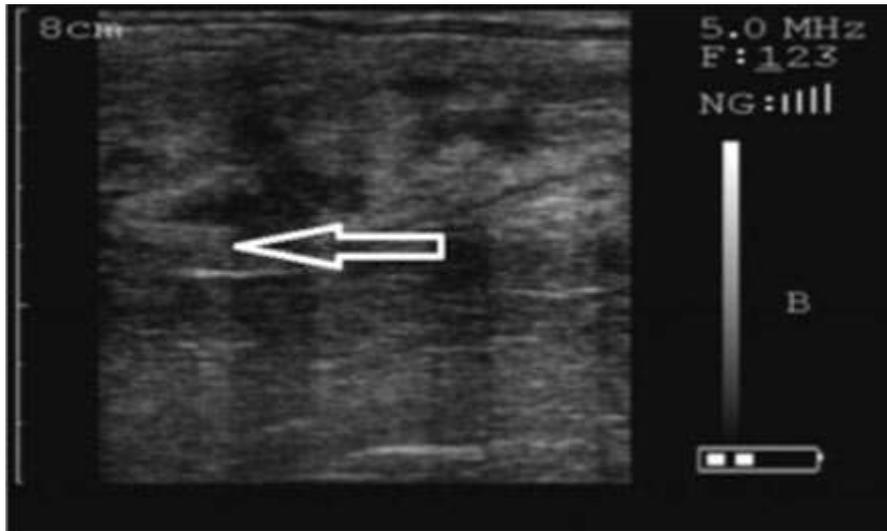


Clinical endometritis

- Muco-purulent discharge or flakes of pus in estrual cervico-vaginal mucus
- Occurs 3-8 weeks postpartum but can occur after use of contaminated AI gun for insemination
- Ultrasound examination can reveal
- Increased endometrial thickness or
- Fluid accumulation/Metricheck



Ultrasonography



Metricheck

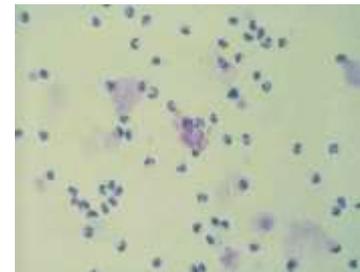
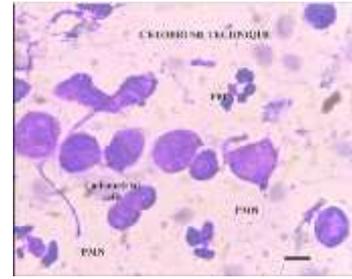


Biopsy/microbial evaluation



Sub-clinical endometritis

- Beyond 8 weeks post-partum
- Mucus discharge is clear
- Repeat breeding
- Diagnosis by endometrial cytology



White side test for diagnosis of clinical endometritis (From left: mild (light yellow), moderate (yellow), severe metritis (deep yellow) and negative (no colour change)).



Uterine abscess

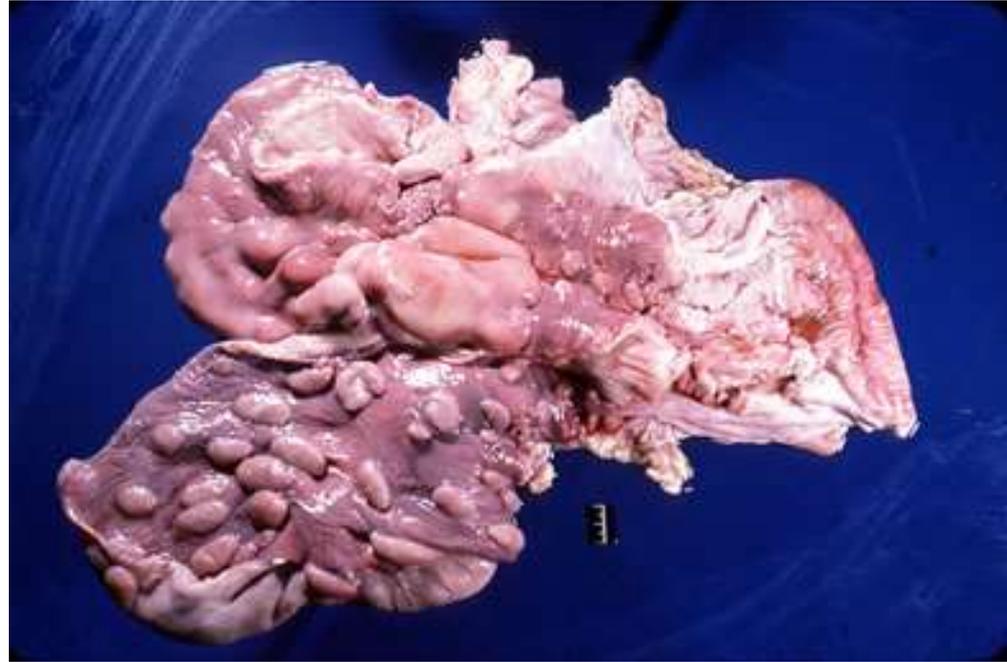
- Rare
- Painful on palpation
- Multiple nodular structures can occur in Tuberculosis
- USG can be helpful in diagnosis
- Broad spectrum antibiotics can be tried

Uterine tumors

- Uterine tumors are infrequent in cattle and buffalo.
- A tumor may cause bleeding from the uterus during estrus due to contractions that occur over the tumor.
- Tumors may sometimes interfere with the progression of a pregnancy when they are sufficiently large.

Lymphosarcoma cow

Lymphosarcoma detectable as multiple smooth nodular enlargements of the uterine wall, often with concurrent enlargement of the deep inguinal and iliac lymph nodes.



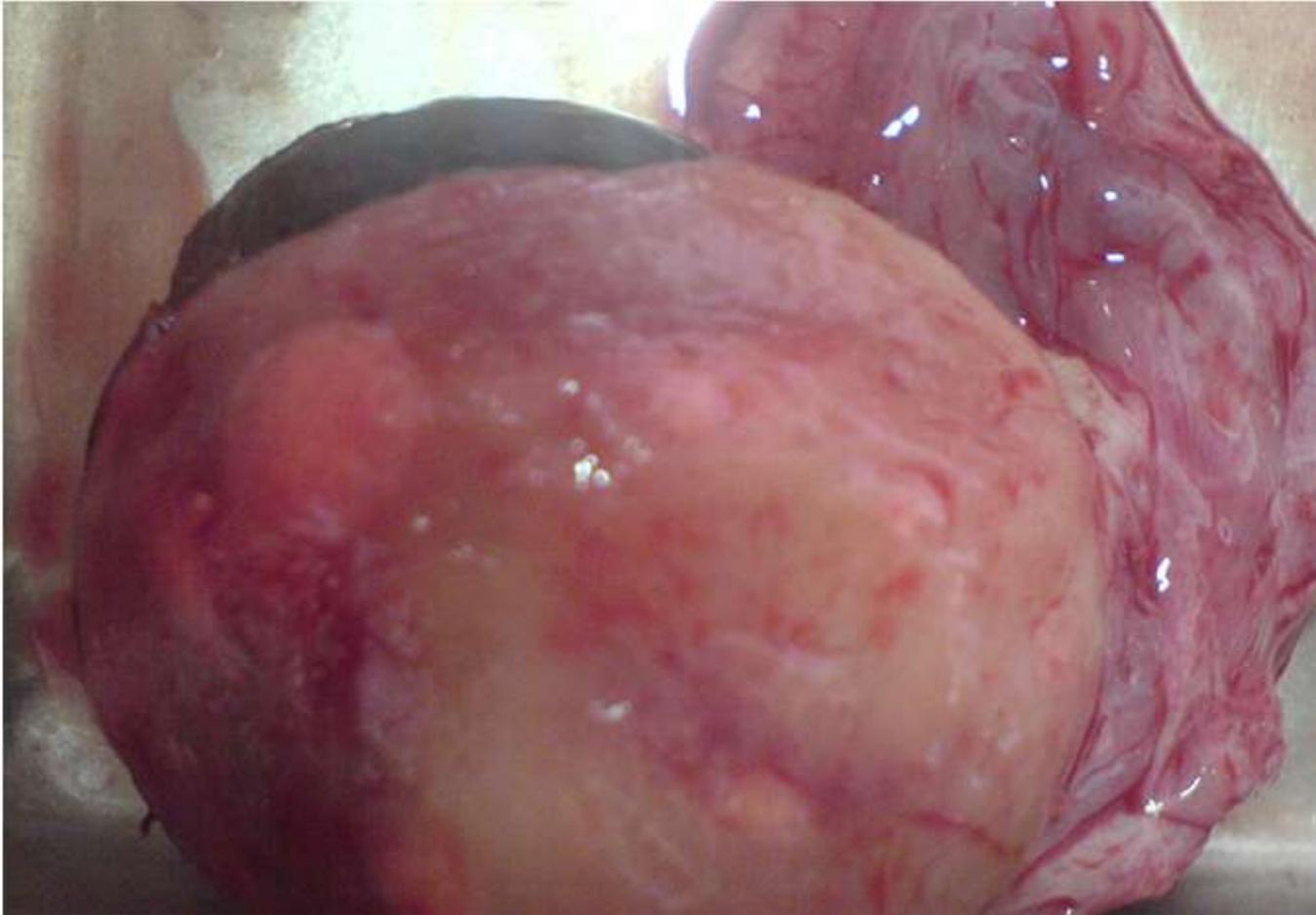
Adenocarcinoma cow



Fibroma



Fibrothecoma



Endoscopy



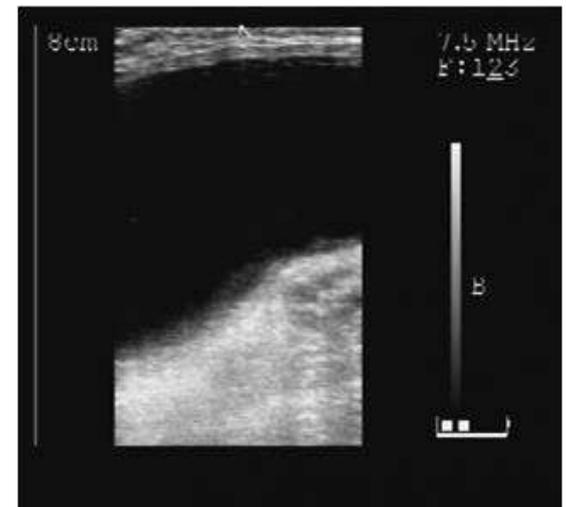
Mucometra: usually is a sequelae to long standing cases of ovarian cysts and frequently pose diagnostic problems as pregnancy to clinicians.

Diagnosis:

Animals may have normal estrus cycle with
Discharge of watery/mucoid fluid in excess
Absence of fetus, membrane slip on palpation
Ultrasonography- No fetus, No cotyledons

Therapy

Prostaglandins
Iodine preparations



Cervix: common problems of cervix include cervicitis, cysts of the cervix, complete stenosis or obstruction of the cervix, mucocervix and tumors.

Cervicitis frequently follows metritis or vaginitis and abnormal parturitions, sometimes it may occur post coital. It can be diagnosed on vaginal examination with a speculum and light. The external os of the cervix is usually edematous and swollen, the mucosa is cherry red in color. Cervical stenosis may follow severe infection or trauma. Therapy usually involves the treatment of the primary cause and application of emollient antibiotic containing creams.

A common finding in many cows is the presence of a **kinked 'S' shaped cervix** that poses difficulty in passing of the AI gun. A beta 2 adrenergic drug is suggested for such cows at the time of AI (Inj. Duvadilan 10-12 ml IM or IV)
Stenosis may follow chronic infection.

Cervicitis



Cysts of the cervix: are observed occasionally and called **Nabothian cysts**. They are apparently retention cysts of the cervical glands . They may be congenital but usually acquired secondary to trauma. A part of it may be seen on external os on examination. They may recover spontaneously or incised by a needle, teat bistoury or a knife.

Nabothian cyst



Nabothian cysts also occur in water buffalo (*Bubalus bubalus*)

The cervix has a large population of Nabothian mucus-secreting glands. They provide lubrication during coitus and a cervical seal during pregnancy. It is when the secretory ducts of these glands become occluded, that Nabothian cysts develop. In cattle copious amounts of mucus are produced by the cervical glands during estrus but little, and of a more tenacious nature, during the luteal phase.

Unless Nabothian cysts are very large and impede copulation, sperm transport or even artificial insemination, their effect on fertility is insignificant.

Vaginitis:

This may occur following trauma, lacerations, and bacterial, viral or protozoal infections produced at the time of dystocia, fetotomy, prolapse or postpartum metritis.

Sometimes it may occur due to other reasons.

The signs of vaginitis include mucopurulent, yellow-grey pus discharged from the vulva at irregular intervals and mats the hair of the vulva, tail and buttocks..

Vaginitis due to IBR may recover spontaneously whereas that subsequent to metritis require therapy of metritis.

Vaginal pessaries or creams may be used. Cysts and tumors of vagina are rare



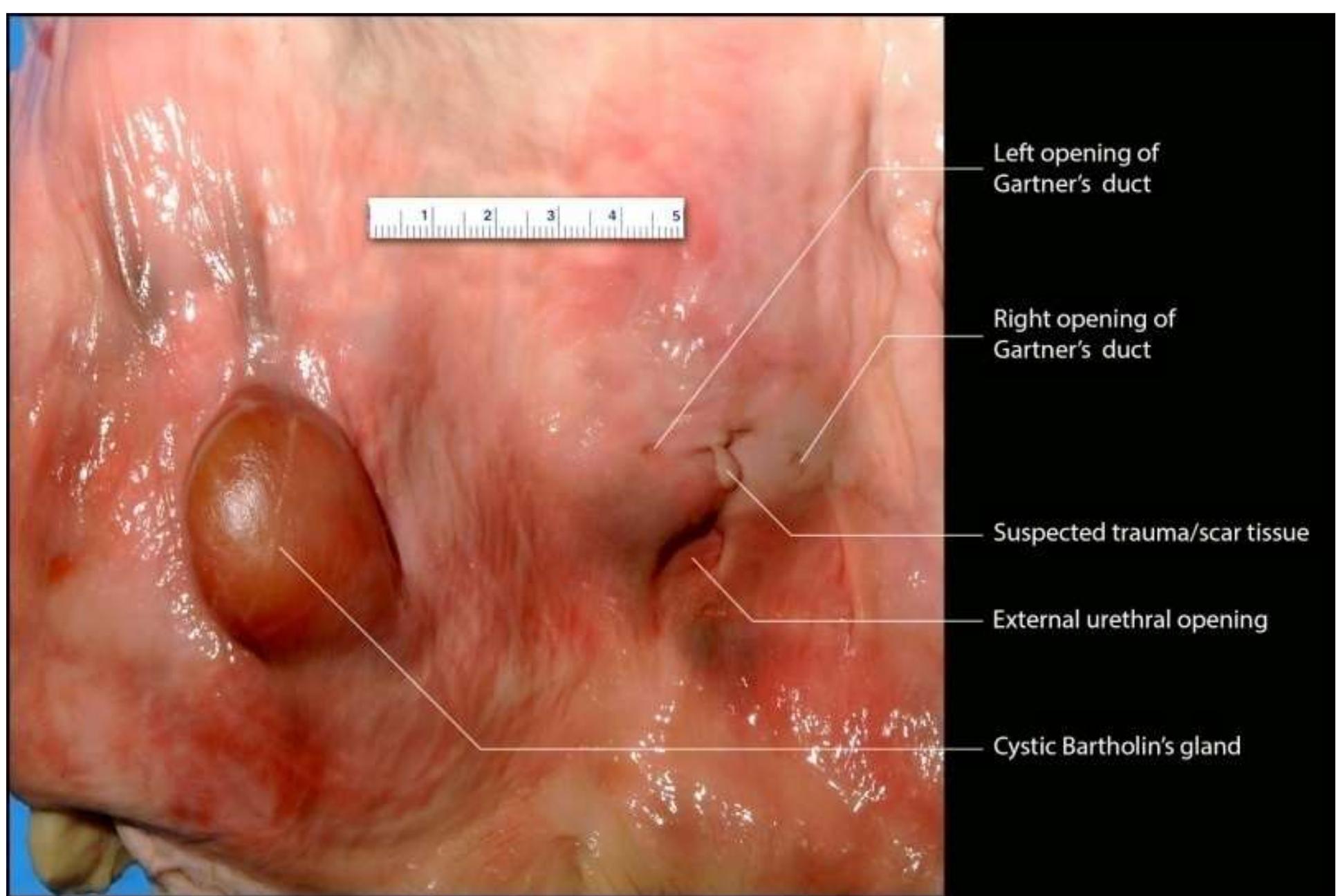
Vestibulitis and vulvitis are rare and treated in manner similar to that used for vaginitis. When crows sit on an inflamed vulva or when wounds remain for long time maggots may appear that require removal and application of turpentine oil or sprays.



Cystic structures in the vagina

Bartholin's glands are anatomical analogs of **bulbourethral glands (Cowper's glands)** in males and referred to as the **major vestibular glands**.

It is likely that cystic Bartholin's glands have little effect on reproductive efficiency unless (as has been reported) they become so large as to protrude from the vulva lips and become contaminated, predisposing the animal to vaginitis



Left opening of Gartner's duct

Right opening of Gartner's duct

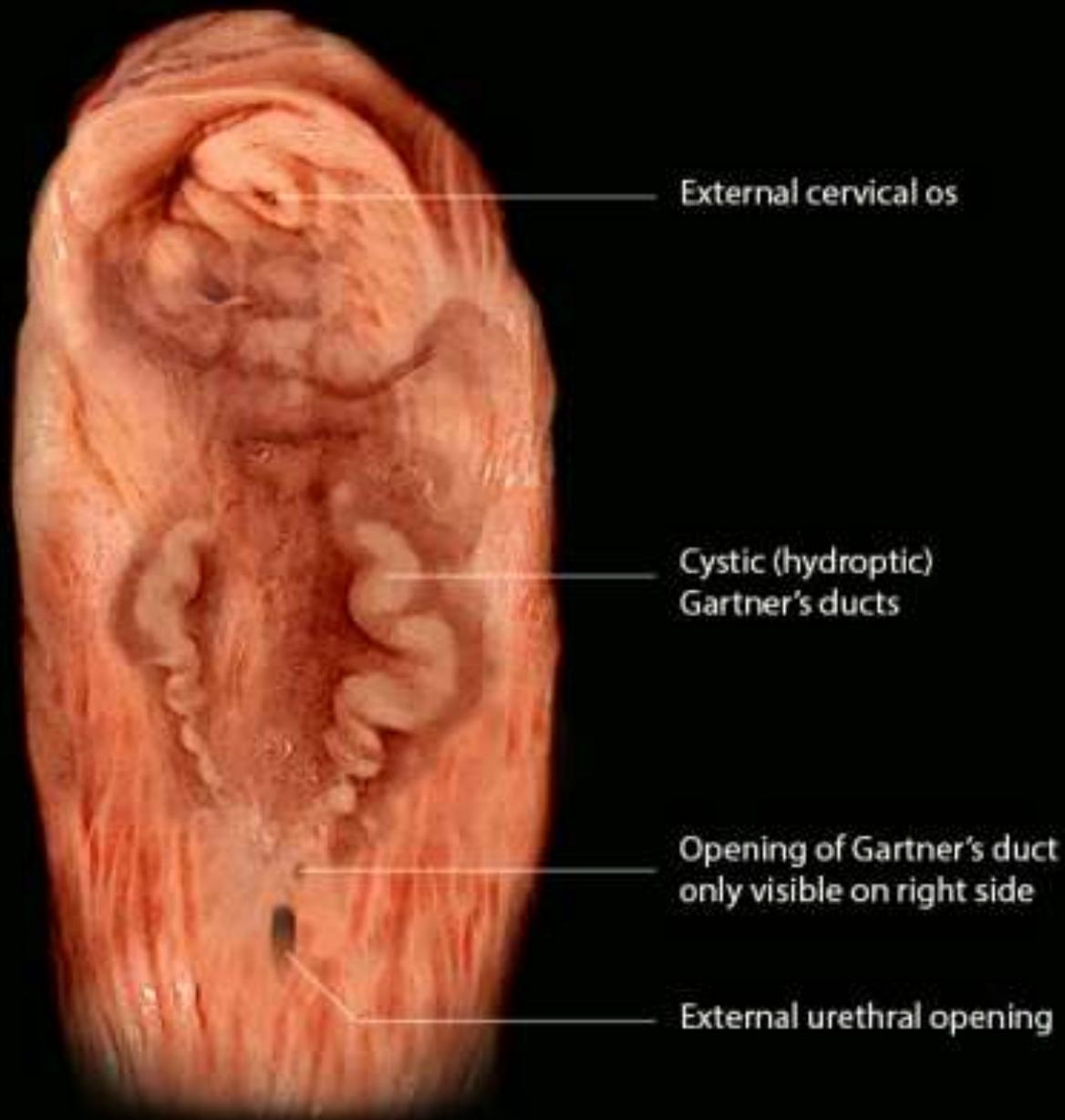
Suspected trauma/scar tissue

External urethral opening

Cystic Bartholin's gland

Cystic Gartner's ducts

- Gartner's ducts are remnants of the mesonephric (Wolffian) ducts present in bi-potential early embryos.
- These glands are analogous to the **prostate gland** in males.
- **Gartner's ducts** were present in approximately 1% of the samples
- In most cases, cystic Gartner's ducts do not interfere with reproduction



External cervical os

Cystic (hydroptic)
Gartner's ducts

Opening of Gartner's duct
only visible on right side

External urethral opening

Vaginal tumors

Squamous cell carcinoma, fibroma, fibrosarcoma, leiomyoma are common



- The above lectures are also explained in video lectures at my YouTube Channel Govind Narayan Purohit
- Kindly share the videos and subscribe to my channel if you like them
- Thanks