



CVE – AGMOOCS - TANUVAS



# Topic: Congenital and acquired defects of reproductive tract causing infertility in bovines

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# INTRODUCTION



## **Congenital anomalies**

- Hereditary defects are usually due to single gene effects.
- Certain genes adversely affect both cows and bulls whereas others are sex-limited in their effect.
- Ovarian agenesis
- Ovarian hypoplasia
- White heifer diseases
- Freemartin
- Congenital lack of endometrial glands
- Uterus didelphis
- Uterus unicornis
- Double cervix
- Persistence of Gartners duct

## **Acquired lesions of reproductive tract**

- Ovaro bursal adhesion
- Ovarian tumour
- Endometritis, metritis and Pyometra
- Cervicitis
- Tumour of vagina
- Cystic Ovarian Degeneration (COD)
- Perineal laceration
- Rectal fistula



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# LESSON I- CONGENITAL AND ACQUIRED DEFECTS OF OVARY AND OVIDUCT



# OVARIAN AGENESIS



- The condition of a complete failure of development of gonads or lack of one or both gonads - **Ovarian agenesis**
- This is probably an **inherited autosomal dominant**.
- These gonadless heifers appeared normal until breeding age, but no estrum occurred and normal udder development is lacking.
- The genital tracts of these heifers are juvenile and undeveloped.



# OVARIAN HYPOPLASIA



- Ovarian hypoplasia- little **more common** than ovarian agenesis.
- One or both ovaries are **small, functionless**, and composed of largely undifferentiated parenchyma.
- Oocytes and follicles are virtually absent.
- It is due to **single recessive autosomal gene with incomplete penetration**.
- The affected ovary may be **partially or totally hypoplastic**.
- Depending on the severity of the hypoplasia and whether the condition is **unilateral or bilateral, infertility or sterility will result**.
- In bilateral cases, the affected heifer is anestrous.
- In cows, **left-sided ovaries were most commonly affected** with hypoplastic ovaries
- **Diagnosis**- only by repeated rectal examinations of the ovaries over a period of time or at the time of slaughter.

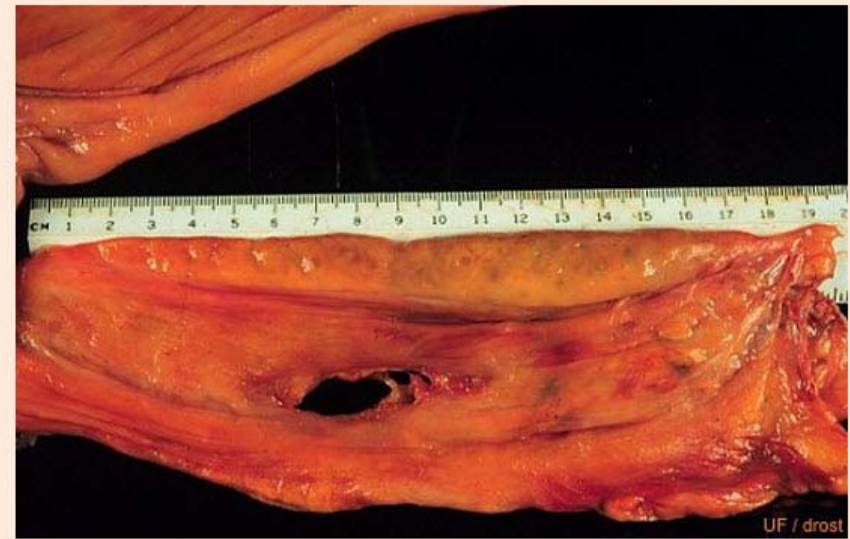


# OVARIAN HYPOPLASIA



## Ovarian Hypoplasia

Complete congenital hypoplasia of the left ovary. The right ovary is normal.  
The elongated ovary is referred to as streak gonad.  
(Source: Drost Project)



## Streak Gonad

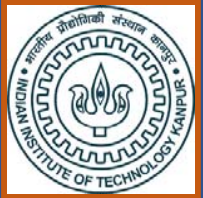
Hypoplasia of the ovary. 18 cm long  
(Source: Drost Project)



# OVARIAN HYPOPLASIA



- The hypoplastic ovary undergoes incomplete development and a part or the whole ovary lacks a normal number or complement of primordial follicles.
- Total of **50,700 primordial follicles** ranges from **6,800 to 100,000** in both ovaries of normal heifers
- In affected heifers, **one ovary** was totally or partially **hypoplastic** and the **primordial follicles** are **19,000 to 23,000**.
- **Partially** affected ovaries with **bilateral hypoplasia**- **<500 primordial follicles**
- **Totally hypoplastic ovaries** with **bilateral hypoplasia**- **No follicles**
- In **unilateral hypoplasia**, the **tubular portion** of the genital tract **develops normally**.
- In **bilateral total hypoplasia**, the genital tract remains **very small and infantile**;



# OVARIAN HYPOPLASIA



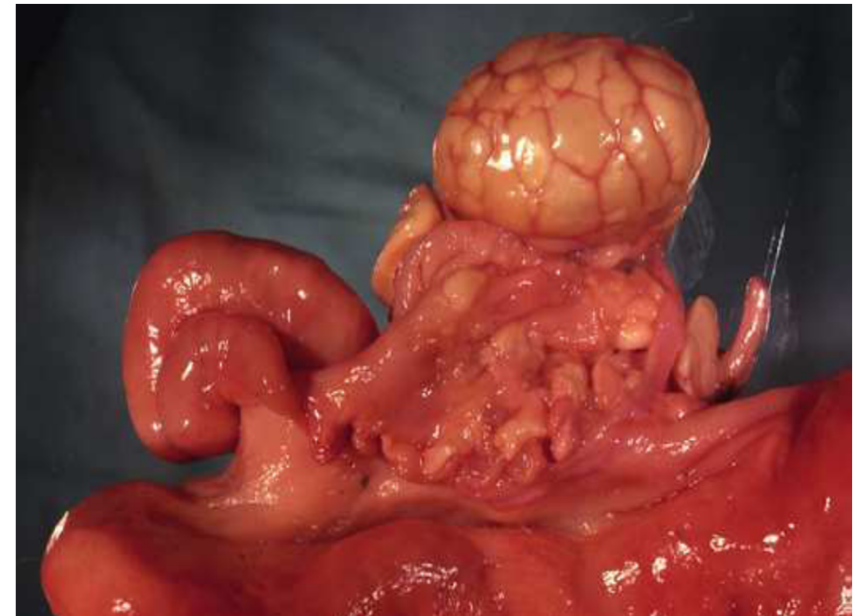
- These gonadless heifers appeared normal until breeding age, but no estrum occurred and normal udder development was lacking.
- The genital tracts of these heifers are juvenile and undeveloped.
- Estrum does not occur and there is no development of the secondary sex characteristics due to a lack of estrogens.
- In bilateral total hypoplasia, the **heifer is like a steer with long legs, a narrow pelvis, a poorly developed udder with small teats, and a small, firm uterus.**





# OOPHORITIS

- Ovaritis or oophoritis is a **very rare** lesion of the ovary
- Usually seen as adventitious findings at postmortem examination.
- Cases of **tuberculous oophoritis**, **brucella-induced oophoritis**, and **ovarian abscessation** in animals were reported that have had generalised pyaemia.
- Cause- Eucleation of the corpus luteum (CL) for ovarian abscesses





# OVARIAN NEOPLASIA



- Neoplasia of the bovine ovary is **rare**.
- The most frequently encountered tumours are **Granulosa cell tumours and Fibromas**
- Most granulosa cell tumours-reported from non-pregnant cows-also occur in pregnant cows.
- Produce any of the main ovarian steroids, although **oestrogen or androgen production are the most common**.
- Tumours that secrete **oestrogens- persistent oestrus behaviour**
- In longstanding cases, **virilism** may occur.
- **Progesterone or androgen secreting tumours- anoestrus**.
- **Unaffected ovary- typically regressed and inactive**.
- GCTs- generally regarded as **benign and metastasis is very uncommon**.
- Other occasional **tumours-carcinomas, fibromas, thecomas, and sarcomas**- generally benign and often massive in size.



# OVARIAN NEOPLASIA



## Smooth Granulosa Cell Tumour

Granulosa cell tumour appears smooth and firm on rectal palpation. The presence of corpus luteum on the contralateral ovary suggests that the tumour is endocrinologically active.

(Source: Drost Project)



## Large Granulosa Cell Tumour

Appears lobulated. The heifer acted like a bull and showed aggressive behaviour.

(Source: Drost Project)



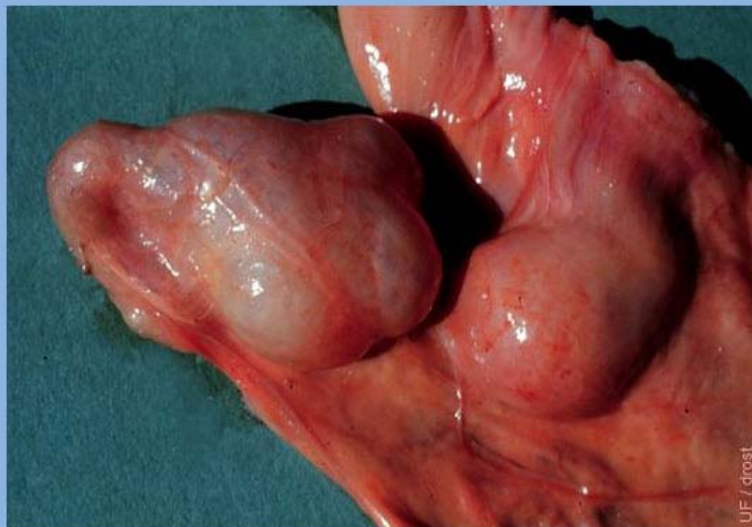
# PAROVARIAN CYST



- Parovarian cysts are **remnants of the mesonephric ducts** that are sometimes **present in the mesosalpinx of cows**.
- Tiny parovarian cysts of a few millimetres in diameter are common incidental findings in slaughtered cattle.
- Larger cysts of between 1 and 3 cm in diameter may be discovered during manual or ultrasound examination of the tract *per rectum* when they may be confused with ovaries.
- Parovarian cysts are of **no consequence to the reproductive performance** of the animal

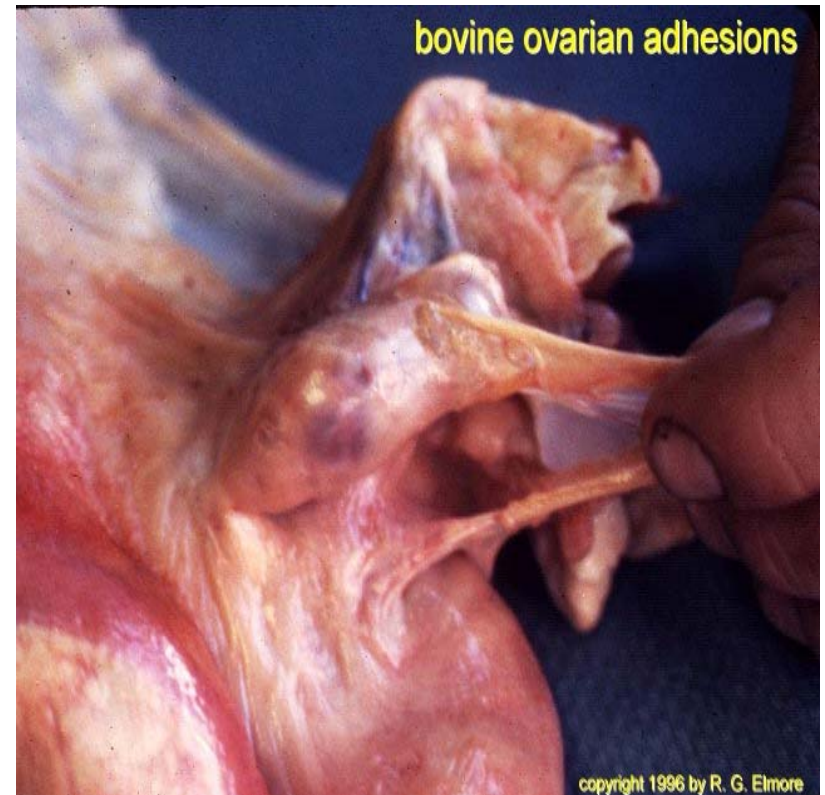


# OVARIAN BURSAL DISEASE



## Ovarian Adhesions

Periovarian tissues are smoothly adherent to the ovary preventing ovulation. Ovaries are difficult to palpate and delineate. If bilateral, animal is sterile.  
(Source: Drost Project)





# HYDROSALPINX AND PYOSALPINX



**Hydrosalpinx**  
The Degree of distention varies with the location of the blockage. Minimal distension is difficult to diagnose by palpation per rectum or even by ultrasonography.  
(Source: Drost Project)



**Hydrosalpinx- Close up view**  
There is distension of the left oviduct as a result of adhesions.  
(Source: Drost Project)





# SUMMARY OF DAY 1 LECTURE



## **Congenital defects**

- Ovarian Agenesis
- Ovarian Hypoplasia
- Oophoritis
- Ovarian Neoplasia

## **Acquired defects**

- Ovarian Bursal Disease
- Hydro and Pyosalpinx