



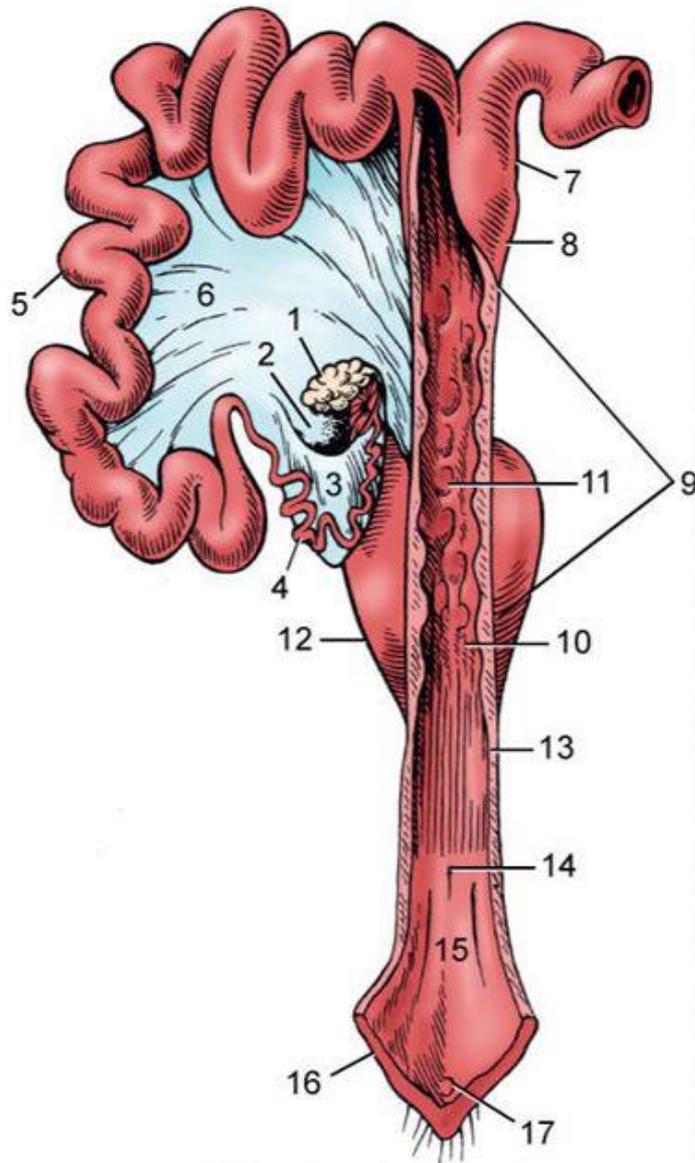
# Porcine Infertility

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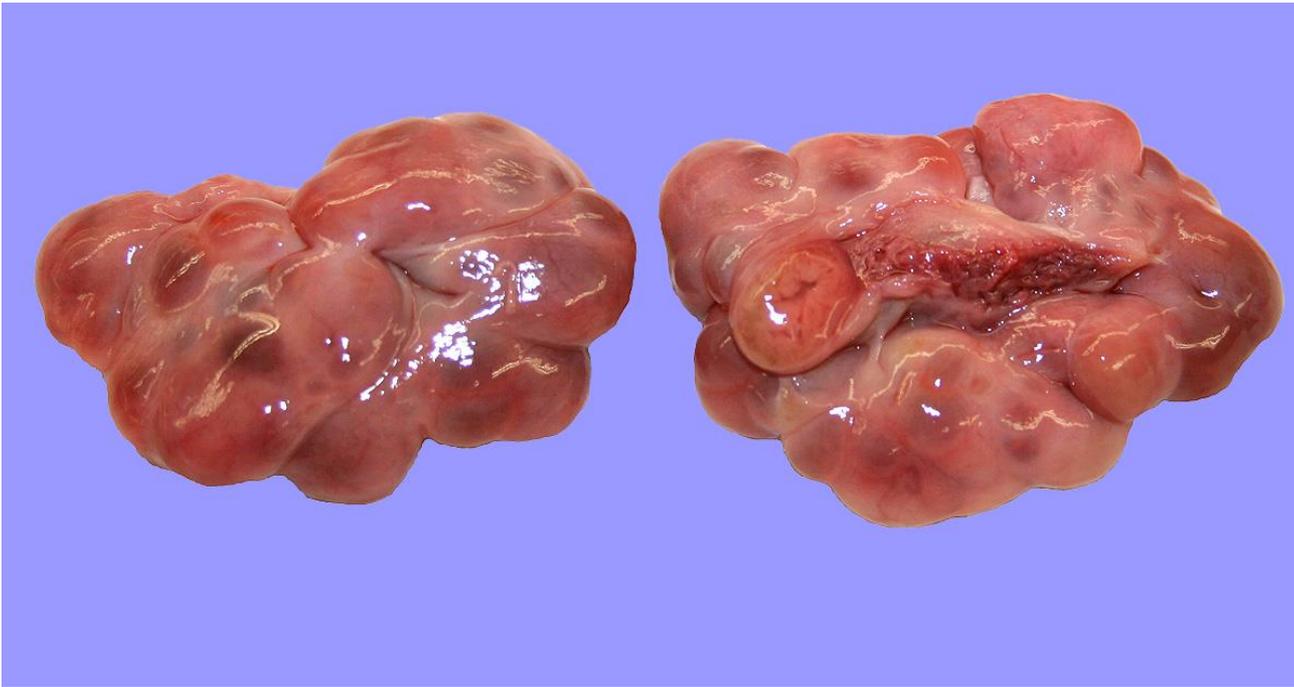
# Litter bearing species

- 20 piglets weaned every year Average 9.5-11
- 2 litters every year
- No of teats 12-14 5% sows have 16 teats
- Puberty- 6-8 months Yorkshire/Landrace mature earlier
- 200 days age and 110-125 kg weight optimal
- Mating after 2<sup>nd</sup> or 3<sup>rd</sup> estrus

# The Reproductive Tract of the Sow



1. Left ovary
4. Uterine (Fallopian) Tube
5. Uterine Horn
- (6. Broad Ligament)
7. Parallel segments of the uterine horns
8. Body of Uterus
9. Cervix
10. External uterine orifice
13. Vagina
16. Vestibule



- **Uterus very long 2-3 feet lies in abdomen dorsal to intestines**
- **Cervix 6-8 inches has no fornix. Cervix has a spiral pathway with five interdigitating pods**
- **Vagina 12-18 inches long**
- **Ovaries mulberry shaped**
- **Oviduct 6-10 inches. The infundibulum is very large almost surrounding the ovary**

# Estrous cycle

- Polyestrus throughout the year
- Estrous cycle length 18-24 days Average 21 days
- Estrus 40-60 h (1-4 days) shorter in gilts
- Number of ovulations 10-20
- Ovulation 36-42 h after onset of standing estrus (10-85h) sows breed many times.

- One LH peak occurs
- Prolactin is luteotrophic in pigs
- **Pregnancy establishment**
- At least 2 embryos required in each horn
- Pig conceptus secrete interferon-delta but have no role in maternal recognition of pregnancy
- Estrogens are luteotropic and secreted from Day 11-15
- Gestation 115 days (112-118 days)

# Breeding

- 1 boar for 20-30 females
- One adult boar 10 breedings/week (5 females bred twice)
- Younger boars 2-3 females/week
- 1<sup>st</sup> mating in sows 4-7 days of weaning
- Mate animals of equal size
- Put sows in boar pens

# Signs of estrus

- Heat detection-twice daily avoid feeding time
- Boar exposure daily 5-10 min
- Nose to nose contact if boar housed near gilts
  
- Back pressure test (lordosis)
- Secondary signs Red swollen vulva  
Altered vocalization  
Mucus discharge

# Causes of subfertility in swine herds

- Fertility Rates in Pigs 95-100%
- Farrowing rates >85%
- Stillborn < 5%
- Mummies < 0.5%
- Abortion < 0.8%
- **Poor heat detection**

- **Mycotoxin contamination in feed and bedding**
- Mycotoxins caused by moulds and fungi are present in grain and straw bedding.
- Zeralenone –Repeat breeding/prolapse
- Deoxynivalenol- vomiting, loss of appetite
- Ergot alkaloids- Rye, oats, wheat
  - Agalactia, low piglet survival
- Feed bins should be routinely emptied and washed and dried before they are refilled.

- **Poor management at mating**
- **Incorrect body condition score**
- Poor or excess body condition score not good
- Breeding gilts at too young age
- **Temperature extremes --Seasonal infertility**
- **Ovarian cysts** – large cysts reduce fertility
  - Small cysts reduce litter size

# INFERTILITY

- Fertility at swine herds high 90%

The parameters in fertility evaluation include herd size, age profile, weaning to estrus interval, conception rate, farrowing rate, lactation length and total piglets born live or still born.

Fertility problems in pigs are

- 1) Anestrus, 2) Conception failure and 3) Pregnancy failure

# **ANESTRUS**

Puberty, pregnancy and lactation commonest problem is lactation

Subestrus Prevalent in summer

Evaluate estrus detection 50-60% in gilts

Detect ovarian activity by P4. Detect estrus once daily in the presence of boar from the day of weaning. Post mortem examination of ovaries in culled sows.

In large groups inadequate space, inadequate diet, photo-stimulation, boar stimulation or poor flooring can lead to anestrus.

# CONCEPTION FAILURE

Total and Partial (reduced piglets born). Normal conception rate 90%. Returns higher than 10% are abnormal/unacceptable

Timing of service Most important should be given on the day of standing estrus and 18-24 h later. Sperms survive for 40 h

Improper intromission

Poor semen quality: Rotate boars for optimum fertility

Poor grouping of animals.

# **PREGNANCY FAILURE**

**Failure to establish pregnancy** : this is difficult to establish and it is suggested to avoid stress at day 12 of conception. Embryos that die before Day 35 are reabsorbed and after Day 36 result in mummification

## **Failure of an established pregnancy**

Reduction in numbers born- infectious disease  
fetal death after day 35 result in mummified fetus  
common in viral infections like porcine  
parvovirus, aujeszky's disease, swine fever,  
PRRS

# Infectious Infertility

Group 1 Infection with organisms present in majority of pig population include organisms like E.Coli, Listeria, Mycoplasma, Pasteurella, Salmonella, Klebsiella and Corynebacterium these result into conception failure/abortion and still births

Group 2 Contagious microorganisms include Porcine enterovirus and porcine parvovirus result into mummification and still births

Group 3 relatively infrequent but they result into severe reproductive loss and include Leptospirosis, aujeszky's disease, PRRS

**Porcine Parvo Virus (PPV) DNA virus and Porcine Enterovirus(PEV) are similar** Worldwide 60% prevalence

They are a common cause of fetal deaths in litters produced by gilts and immunologically compromised sows

Transmission: Fecal-oral route as pigs shed the virus in feces. Trans-placental transmission is also present. The virus is resistant to cold, heat and disinfectants and hence infected premises act as reservoir

Primarily a Gilt disease there is **mummification of many fetuses** in 1<sup>st</sup> parity gilts and there is decrease in litter size and increase in the services per conception.

Diagnosis: Serological tests for diagnosis.

Control: After one infection there is life long immunity  
Gilts must be vaccinated before 1<sup>st</sup> breeding.

## **Porcine reproductive respiratory syndrome (PRRS)**

Disease of pigs caused by RNA virus transmitted by intranasal route and characterized by systemic illness in sows, abortions in sows and chronic respiratory problems in nursery age pigs.

Clinical signs : Anorexia, fever, abortion at 107 for 112 days, vaginal discharge, urinary infection, increased number of still born piglets. New born piglets show coughing, sneezing and a rough hair coat. Boars show listlessness and inappetance

Diagnosis: Clinical findings and virus isolation.

Control: Remove older piglets every 10-14 days to distant places

Vaccinate 3-18 week piglets and gilts 7-10 days before breeding.

Natural herd immunity in 4 months

## Hog Cholera (Swine fever)

An important cause of fetal mummification and abortion in pigs caused by a RNA virus, transmitted by oronasal route and characterized by multiple hemorrhages in lymph nodes, kidneys, spleen and infarction of spleen. The disease has been eradicated from the USA.

Clinical signs: Aborted pigs show subcutaneous edema, hydrops and ascites

Diagnosis: Demonstration of viral antigens in tonsils and other fetal tissues.

# **Pseudorabies (PRV)**

## **Clinical signs**

Abortions may follow fever and respiratory disease in susceptible gilts and sows. Live-born pigs are weak. Pneumonia in growing pigs.

## **Preventive measures**

Vaccination will reduce the severity of clinical disease.

# Bacterial causes of infertility

Mixed bacterial infections	<b>Clinical signs</b> Increased return-to-service. Mild to profuse vaginal discharges. Sows with metritis will have a fever and go off feed.
	<b>Preventive measures</b> Do not house gilts or sows in overcrowded, unsanitary conditions. Provide ample amounts of fresh water.
	<b>Comments</b> A discharge for one to three days after farrowing is normal.
Leptospirosis interrogans pomona	<b>Clinical signs</b> Few clinical cases in previously exposed herd. Susceptible breeding females may abort or deliver weak or dead pigs.
	<b>Preventive measures</b> Vaccinate breeding animals two to four times each year. Protect feed and water from urine contamination.
	<b>Comments</b> Rodent numbers should be controlled because they also contribute to the spread of this disease.
Brucella suis	<b>Clinical signs</b> Abortions during any stage of pregnancy.
	<b>Preventive measures</b> Prompt removal of all aborted tissues. Routine testing for maintenance of brucellosis-free herd.
	<b>Comments</b> Potential for human infection.

# Urogenital infections and vulvar discharge syndrome

## Predisposing factors

High humidity  
Restricted movement  
Poor hygiene

## Common complaints

Vaginal discharge- dried deposits on perineum/floor  
Low grade fever/ weight loss  
Increase in weaning to estrus interval  
Decrease in the number of litters per sow per year  
Endometritis/cystitis/pyelonephritis

Discharge rates of greater than 3% should be considered serious

**Therapy** Parenteral and oral antibiotics inefficacious/ residue issues.

# Mastitis Metritis Agalactia (MMA)

- Etiology poorly known- presumed E Coli
- Prevention
- Avoid sows to become overweight
- Clean floors daily –good hygiene
- Increase feed gradually after farrowing
- Scrub sows before entry to farrowing crates
- Maintain farrowing temp 18-20 degrees C

# Diagnostic approaches for infertility

- Transrectal palpation- must be done carefully
- Transcutaneous USG- Above stifle lateral to mammary glands- 3.5 MHz Sector probe
- Post slaughter examination of genitals
- Blood collection- saphenous vein of hind leg.

- 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