



EQUINE INFERTILITY

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Equids belong to order Perissodactyla which includes
family
Rhinocerotidae
Tapiridae and
Equidae

- Equids Domestic Equus caballus
 Feral E. Prezwalski Extinct
 Asiatic wild ass
 African wild ass
 Zebra Plains, Mountain, Grevys

NORMAL EQUINE REPRODUCTION

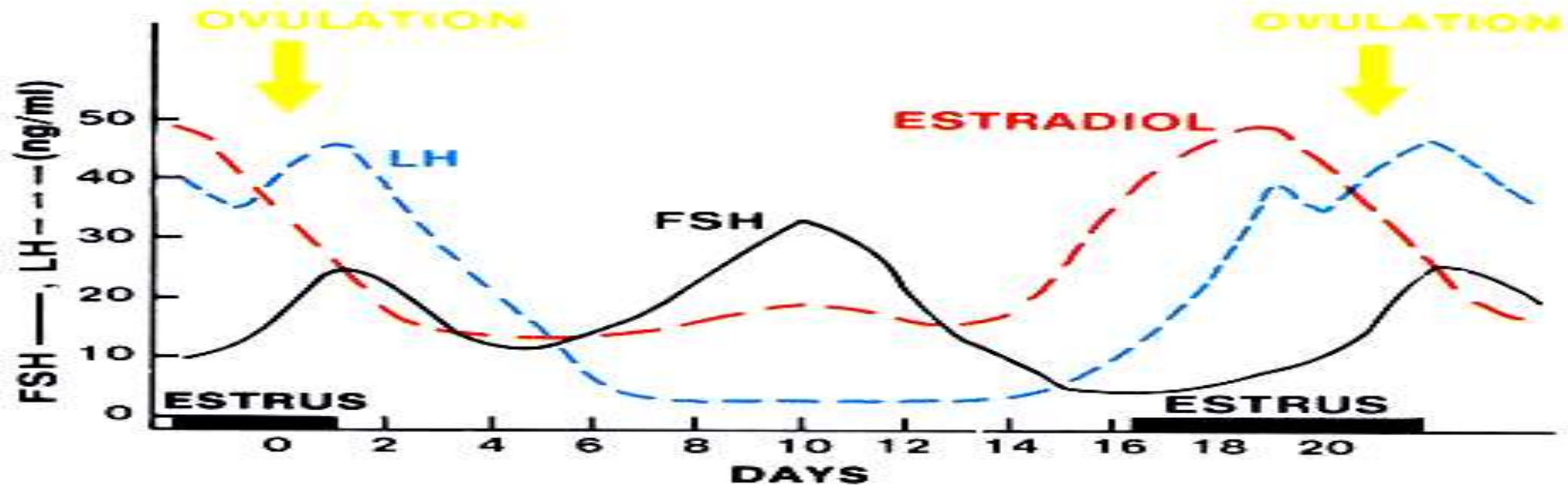
- Breeding season

Mares in North Hemisph	15 Feb to 1st Week of July
Mares in South Hemisph	August to December
African wild ass	All year (Sp Apr and May)
Grevys mountain zebra	April to September
Burchells zebra	April - May

Estrous cycle

Mare Av. 21 days cycle length 5-7 days

Donkey mares cycle length 5 to 7 days



Physiological Breeding Season

- 21 day inter-ovulatory interval (estrous cycle)
 - Estrus (heat): 5 – 7 days
 - Ovulation: 24 to 48 hours prior to end of heat
 - Diestrus: 14 – 16 days

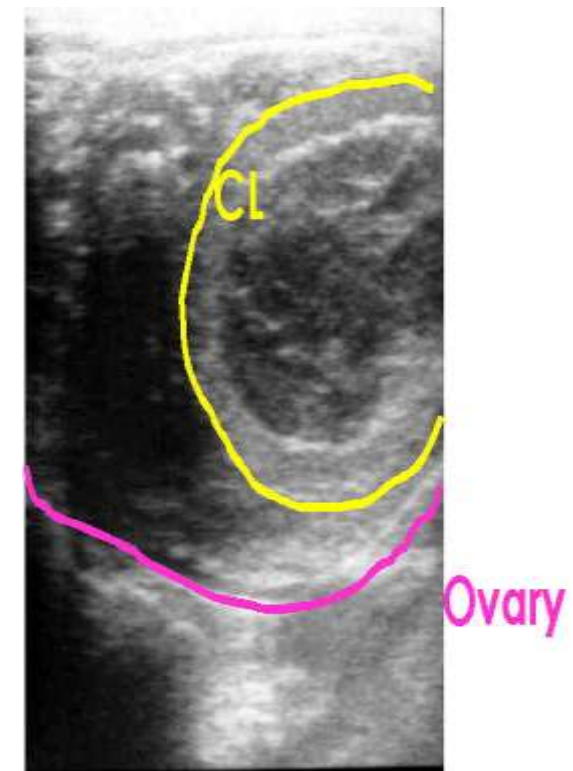
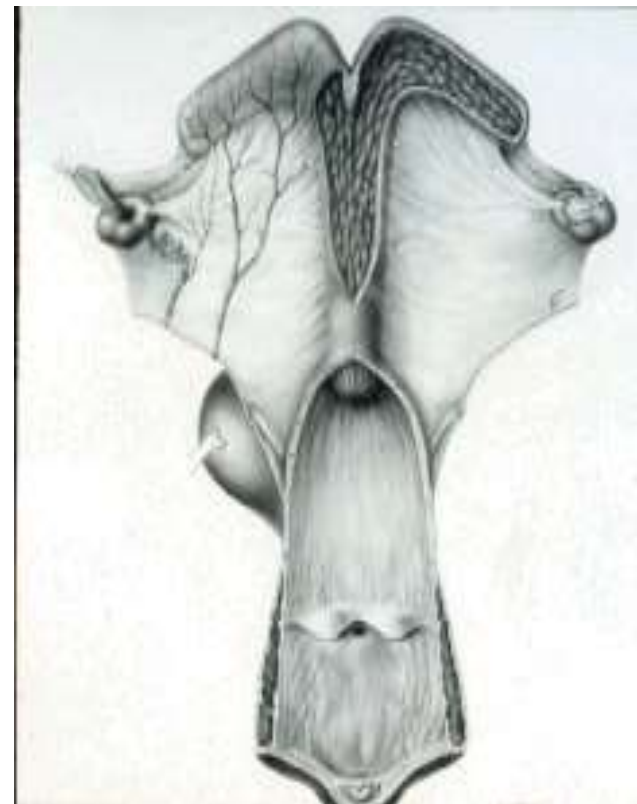
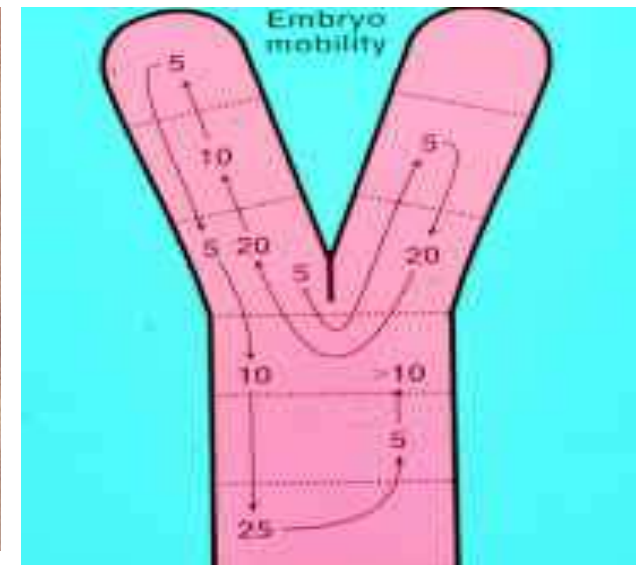
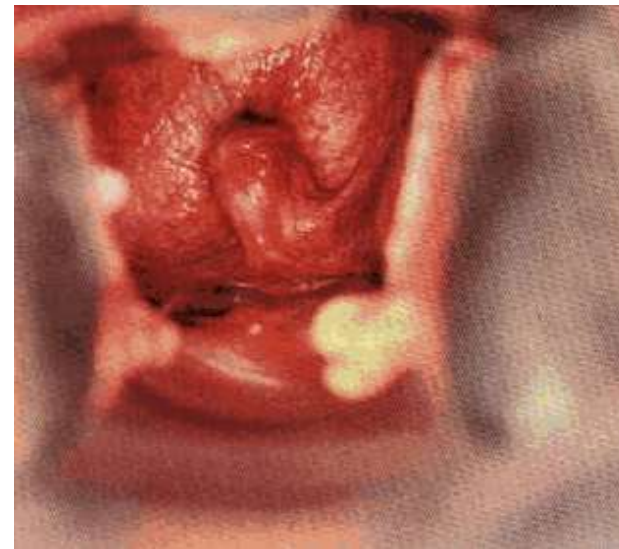


Mating Behavior (Estrus signs)

- The mare will allow the stallion to **smell and bite**.
- She will
 - **extend her hind legs,**
 - **lift her tail to the side and**
 - **lower her rump.**
 - The erect clitoris will be exposed frequently by contractions (**winking**) of the labia.
 - The **vulva will be elongated** and swollen, with the labia partly everted.
- The mare should be teased by a stallion for accurate detection.
 - Attempts to fight the stallion indicate she is not in estrus even though some other signs of estrus are apparent.



- Some peculiarities of reproduction
- Seasonality
 - Uterus
 - Cervix
 - Fallopian tubes
 - Embryonic signals and mobility
 - Ovulation & CL
 - Teasing program



Sperm survival and capacitation

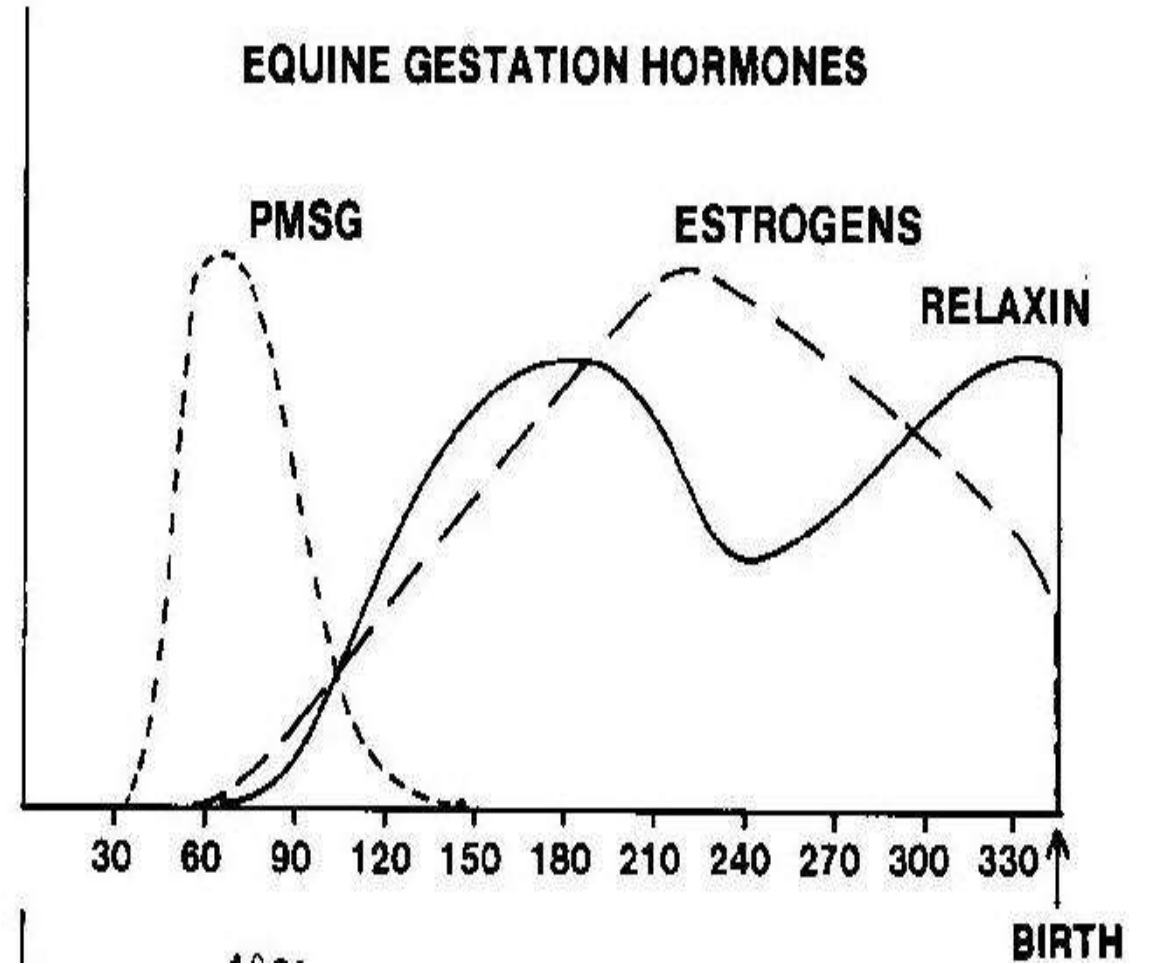
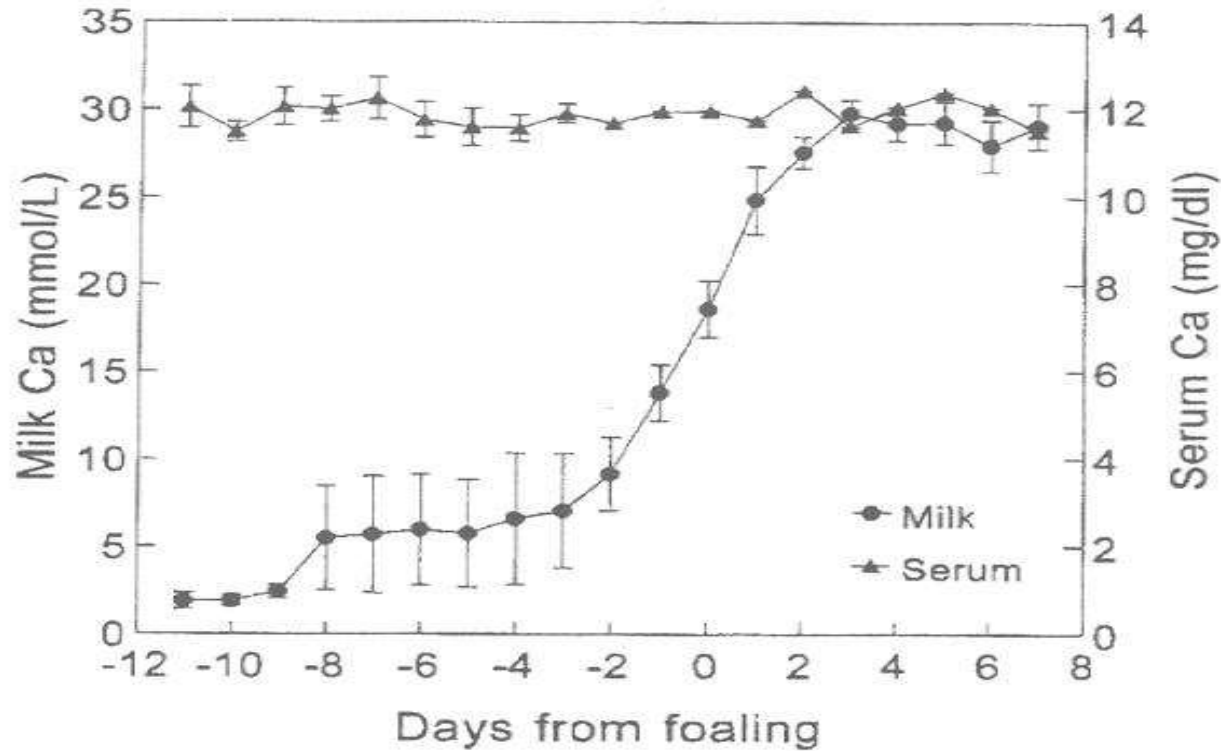
48 h max 6 days

- Gestational length Range from 320 to 360 (mean - 340) days
- eCG from endometrial cups 35-90 days forming accessory CL
- P4 from CL low from 120-300 days of gestation
- Placental progesterone 90 day onwards



Gestational hormones

Mammary secretion electrolytes near foaling



Foaling Night hours Voluntary labor

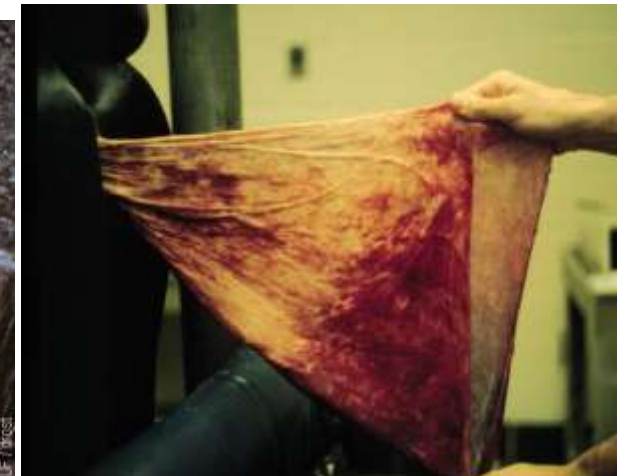
postponement of

- First stage 10 min-5 hr (Av 1hr) rupture of corioallantois
- Second stage 15-20 minutes birth of fetus. Not beyond 60-70 min.

Third stage

Falling of placenta(within 3 hrs)

Uterine involution



Normal Equine serum hormone levels

HORMONE	Normal value	Reprod condition
Progesterone	> 4 ng/mL	Pregnancy
	7.2 + 1.8 ng/mL	Day 9 post ovulation
	<1 ng/mL	Estrus
Testosterone	20-30 pg/mL	Normal mare
	> 70 pg/mL	Granulosa cell T
Estradiol	2.2 + 1.0 pg/mL	Day 5 pre estrus
	7.1 + 1.6 pg/mL	Estrus onset
	6.8 + 1.7 pg/mL	Ovulation
	4.3 + 0.7 pg/mL	Mid estrus
Estradiol 17-Beta	5 pg/mL	Ovulation
	25 pg/mL	Day 17 post ovulation

INFERTILITY TEMPORARY LOSS OF FERTILITY

REPRODUCTIVE FAILURES

- I. Shortness of the breeding season
 - Long day breeders
 - Jan 1 Birth date
 - During early season cycles irregular
 - Ovulation failures
- II. Genital infections and abnormalities
 - Genital Infections
 - Infectious Contagious equine metritis CEM
 - Coital vesicular exanthema (Gen.Pox)
 - Trypanosoma Equiperdum (Dourine)

- Non infectious

Endometritis

Pnuemovagina

Defects of Perineum

Vaginitis, Cervicitis etc..

Genital abnormalities

Tumors of the genital tract

Congenital abnormalities

Cysts

Chromosomal abnormalities

Age

- **Reported to have the most significant bearing on reproductive performance**
- **Decrease in fertility may be in part due to**
 - **An increase in transit time for sperm to reach the oviduct**
- **Anovulatory estrus is greater in mares over 20 yrs**
- **Placental development and blood supply are also adversely effected**

III. Irregularities of the estrous cycle

- Long periods of estrum
- Long diestrus periods
- Irregular periods of estrum
- Anestrus
- Delayed Ovulation
- Nymphomania

Hypothalamic – pituitary – ovarian homeostasis

**Majority of hormonal deficiencies are associated with:
Pituitary abnormalities**

Can cause:

Prolonged estrus

Prolonged di-estrus

Silent ovulations

Can eventually lead to reproductive failure

Synthetic Progesterone has proven successful in treatment

CEM

- First reported in England
- Caused by *Tayllorella equigenitalis* a gram negative coccobacillus.
- Venereal and other transmission
- Infection and discharge from uterus
- Infection localisation on clitoris

Genital POX

- Venereal Transmission
- Equine Herpes virus which do not cause abortion
- Papules on vulva in female and on Glans and prepuce in male
- Spontaneous recovery in 10-14 days.

DOURINE

- *Trypanosoma equiperdum*
- Venereal Transmission
- Dollar plaques on skin post recovery
- Trypanosomes in genital discharges

ENDOMETRITIS

- **Mostly arise due to poor vulvar conformation**
- **Poor labial muscle tone**
- **Abnormalities of perineum**
- **Pathological parturition**
- **Unhygienic breeding**
- **PMIE**
- **Diagnosis: Physical exam- Rectal & Vaginal**
 - Uterine Cytology**
 - Uterine biopsy**

Treatment Antibiotics after sensitivity tests

Episioplasty & Perineoplasty in anatomical defects

VAGINITIS/ CERVICITIS less common, fibrosis of cervix uncommon

Cervical Incompetence Cervix fails to seal Donkey mares

Mating Induced Endometritis

- ***Streptococcus zooepidemicus***
 - Implicated in 75% of acute endometritis
 - Cause destruction of RBC
 - Major role in initiating infection of cervix and uterus
 - May promote proliferation of other bacteria
- ***Hemolytic Escherichia coli***
 - Second most common cause of uterine infection
 - Can cause acute endometritis but also severe systemic infection

Genital abnormalities

- Granulosa tumor of ovary common in mares and donkey mares
- Endometrial cysts in older mares diagnosed by ultrasonography
- Ovarian cysts uncommon Ovariectomy recommended
- Mucometra seen in older mares occasionally.

Granulosa (theca) cell Tumors

- Most common tumor within the equine ovary
- Important cause of anestrus
- Normally effect mares between the ages of 5 and 7
 - Usually associated with one ovary
 - Ovaries are usually polycystic or large solid structures
 - May weigh up to 18 pounds
- Symptoms may cause
 - Prolonged Estrus
 - Testosterone producing cysts may cause:
 - Stallion Like Behavior
 - Muscular development
- Removal of ovary may lead to normal reproduction

Irregularities of estrus cycle

- Long periods of estrous cycle 75% of the irregularities specially in thin maiden mares during early season. Cycle length 10-20 days.
- Long diestrus periods Infrequent estrus with prolonged periods of diestrus or anestrus. Mares may accept one stallion but refuse another
- Irregular periods of estrus Psychological estrus with no ovulation
- Silent estrus Common in fatty or lactating mares. Heavy drought mares exhibit silent estrus more commonly.

ANESTRUM

- Physiologic during winter
- Pathological Emaciated mares
- Gestational
- Psychological
- Lactational

DELAYED OVULATION Common in shy breeding mares

Nymphomania Severe and Mild type

Management factors affecting equine fertility

- Teasing Program Should be done twice daily
Lactating mares should be teased separately
Begun 30 days prio to season
Foaling mares from 3rd day of foaling
Rectal palpation
Ultrasonography

Breeding at the optimum time

- Breeding at physiologic season
- Manipulation Artificial Lighting
- Feeding for weight gain during season
- Breeding on the basis of rectal palpation/USG
- Careful breeding of foaling mares

BREEDING PREPARATION

Evaluation prior to season

Washing genitals prior to service & careful treatment.

- 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