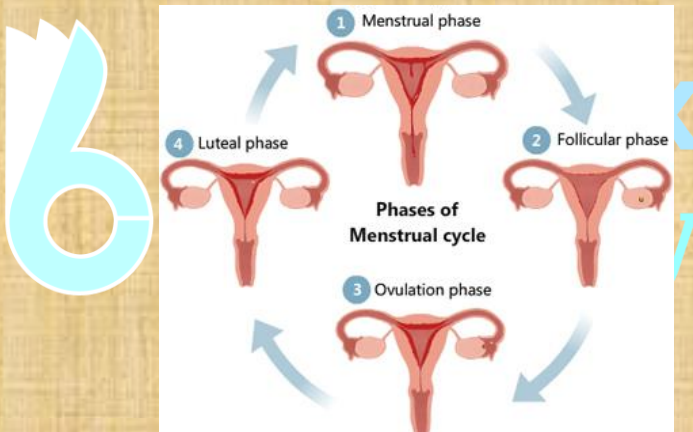
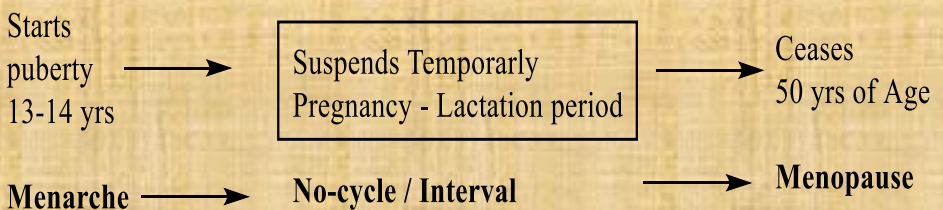


## MENSTRUAL CYCLE

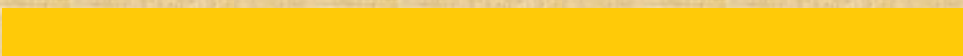
- It is also called ovarian cycle.
- It is regular natural change that occurs in the female reproductive system that makes pregnancy possible.
- These changes will be observed in the female reproductive system.
- 1<sup>st</sup> menstruation begins at **Puberty** and is called **Menarche**.
- Menstrual cycle ceases around 50 yrs. - **Menopause**
- Average menstrual cycle 28 / 29 days.
- Latin word **Mensem - Month**
- Completion of ovulation cycle is preparation for **Fertilization**.



**Figure: Menstrual Cycle**



- One ovum is released during the middle of the cycle.
- The cycle starts with the menstrual phase, when menstrual flow occurs and it lasts for 3 – 5 days.



## Menstrual Flow:

Break down of Endometrial lining of the uterus and its blood vessels, which forms liquids that comes out through vagina.

## Menstruation:

- Occurs if the released ovum is not fertilized.
- **Lack of Menstruation may be indicative of pregnancy**
- It may also cause – stress, poor health

## Menstrual Cycle:

Completed in 4 – phases.

- |  |   |
|--|---|
| 1) Menstrual phase – Vaginal bleeding                      | 4 to 5 days                               |
| 2) Follicular phase – Repairing                            | 10 to 12 days                             |
| 3) Ovulation phase – Ova release<br>(Fertilization occurs) | 14 <sup>th</sup> to 16 <sup>th</sup> days |
| 4) Luteal phase - corpus luteum                            | 15 to 28 days                             |

### 1) Menstrual phase:

- Menstrual flow occurs
- Break down of endometrial lining of the uterus and its blood vessels.
- Which forms a liquid that comes through vagina.

Later – Ovarian events start, developing Follicle.

### 2) Follicular Phase:

- Primary Follicles in the ovary grow to become a fully mature “Graafian Follicle”.
- Simultaneously the endometrium of uterus regenerates through proliferation.
- Changes in ovary & uterus are induced by changes in the levels of pituitary & ovarian hormones.

- Secretions of Gonadotropins (LH & FSH) increase gradually.
- Stimulates Follicular development, secretion of Estrogens by growing follicles.
- Both LH & FSH attain peak level in the middle of cycle.
- Rapid secretion of LH leading to Rupture of Graffian follicle

### 3) Ovulatory phase:

Release of ova –Ovulation.

### 4) Luteal phase:

- It is followed by ovulatory phase.
- Remaining parts of Graffian Follicle transform as the corpus luteum.
- Corpus luteum secretes large amount of **progesterone**.
- Progesterone is essential for maintenance of the Endometrium.
- **Endometrium** is necessary for implantation of the Fertilised ovum and other events of **Pregnancy**.
- **During pregnancy all events of menstrual cycle stops**. No menstruation
- Absence of Fertilization (**No pregnancy**), Carpus luteum degenerates
- Disintegration of the Endometrium leading to **Menstruation (New cycle)**.

## OVULATION

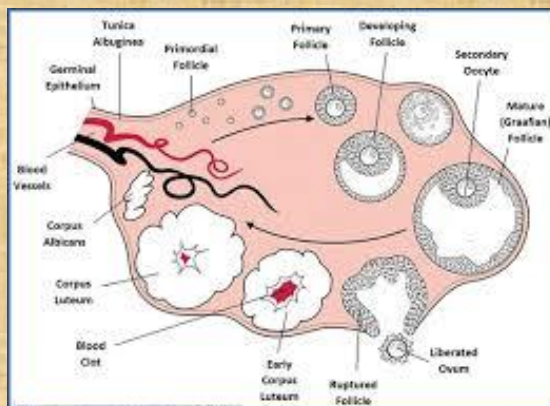
- Ovulation is a process of release ovum.
- The process of formation of a mature female gamete is called **Oogenesis**.
- Oogenesis is initiated by gamete mother cells **Oogonia**.
- Each cell undergo Meiotic division of prophase-I & get temporarily arrested at this stage, called **Primary oocytes**.

- Each primary oocyte then gets surrounded by a layer of granulosa cells and then called **Primary Follicle** with **Polar body**(degenerate)

**A large no. of these follicles degenerate during the phase from birth to puberty & left 60,000 – 80,000 each ovary.**

- These primary follicles get surrounded by more layers of Granulosa cells and form a new theca called **Secondary Follicles**.(haploid) with **polar body**.
- These secondary Follicles soon transform in to a tertiary Follicle **Tertiary**.
- **Tertiary** Follicle having a cavity **Antrum** which is filled with fluid.
- The theca layer organized in to Inner & outer theca Interna.
- **Secondary oocyte** retains bulk of the nutrient rich lytoplasm of the primary oocyte.
- **Tertiary Follicle** further changes in to the Mature follicle or **Graafian Follicle**.
- Secondary oocyte forms a new membrane called **Zona pellucida**.

Rapid increase of LH it stimulates and break down or rupture **Graafian Follicle** and release the secondary oocyte (**Ovum**).



**Figure: Ovulation**