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**CYCLIC CHANGES OF VAGINA**

The cytological examination of the vaginal smears showed that the superficial cells increased in number towards the middle of the cycle and the number of intermediate cells declined gradually. Parabasal cells were observed mainly at the beginning of the cycle; they disappeared towards the middle of the menstrual cycle. During the early follicular phase, the cells were moderately separated from each other, and during the second half of the proliferative or follicular phase, the superficial cells appeared clumped together. Leucocytes were usually absent except for at the beginning of the cycle and in the last few days of the late secretory or luteal phase. The maturation index of the vaginal smears can be considered as a tool for distinguishing the different phases of the menstrual cycle. Shortly after ovulation and parallel to the formation of the corpora lutea, the endometrium enters the secretory or luteal phase, which is characterized by coiling of endometrial glands, glandular secretion and the differentiation of the spiral artery. The most striking changes in the vagina, is the marked basal cell proliferation and thickening of the stratum granulosum during the follicular phase of the menstrual cycle. The histological changes observed in the vagina demonstrated a good correlation with the observation on cytological examination of the smears. To evaluate the changes in vaginal epithelium during thenormal menstrual cycle, vaginal epithelium from six normal,healthy, cycling female rhesus macaques between 5$8 and 10years of age were examined.

**CYCLIC CHANGES OF BREASTS**

Total breast volume, and parenchymal volume, T1 relaxation time and water content were lowest between days 6 and 15. Between days 16 and 28, parenchymal volume, T1 relaxation time and water content rose sharply by 38.9%, 15.1% and 24.5%, respectively, and peaked after day 25. Within 5 days of the onset of menses, parenchymal volume fell sharply by 30.3%, while water content declined by 17.5%. Rising parenchymal volume in the second half of the menstrual cycle is not solely due to increased tissue water content and provides in vivo evidence for both growth and increased tissue fluid at this time. Every woman is different. But it’s common to have one or more of the following:

* Swelling
* Tenderness
* Aches
* Soreness

***MENSTRUAL CYCLE***

The menstrual cycle is the hormonal driven cycle; Day 1 is the first day of your period (bleeding) while day 14 is the approximate day you ovulate and if an egg is not fertilized, hormone levels eventually at about day 25; the egg begins to dissolve and the cycle begins again with the period at about day 30. Menstruation begins day 1 and normally ends days 3-5 of the menstrual cycle. The menstrual cycle is regulated by hormones. Luteinizing hormone and follicle-stimulating hormone, which are produced by the pituitary gland, promote ovulation and stimulate the ovaries to produce estrogen and progesterone. Estrogen and progesterone stimulate the uterus and breasts to prepare for possible fertilization.

At what age do girls go through puberty and begin and start their period (begin to menstruate)?  
The average age for a girl to get her first period in the US is 12, but the range of age is about 8 to 15 years old. Women usually have periods until about ages 45 to 55. During this cycle, your hormones make the lining of the uterus become thicker, getting ready in case of pregnancy. Hormones also cause an egg to be released from an ovary, which is known as ovulation

Period symptoms like these:

* Cramps
* Tender breasts
* Bloating
* Mood swings
* Irritability
* Headaches
* Tiredness
* Low back pain

**STAGES OF MENSTRUAL CYCLE**

## Follicular phase

The follicular phase starts on the first day of your period (so there is some overlap with the menstrual phase) and ends when you ovulate.

It starts when the hypothalamus sends a signal to your pituitary gland to release [follicle-stimulating hormone (FSH)](https://www.healthline.com/health/fsh). This hormone stimulates your ovaries to produce around 5 to 20 small sacs called follicles. Each follicle contains an immature egg.

Only the healthiest egg will eventually mature. (On rare occasions, a woman may have two eggs mature.) The rest of the follicles will be reabsorbed into your body.

The average follicular phase lasts for about 16 days. It can range from 11 to 27 days, depending on your cycle .

**Ovulation phase**

Rising estrogen levels during the follicular phase trigger your pituitary gland to release luteinizing hormone (LH). This is what starts the process of ovulation.

Ovulation is when your ovary releases a mature egg. The egg travels down the fallopian tube toward the uterus to be fertilized by sperm.

The ovulation phase is the only time during your menstrual cycle when you can get pregnant. You can tell that you’re ovulating by symptoms like these:

* A slight rise in basal body temperature.
* Thicker discharge that has the texture of egg whites.

Ovulation happens at around day 14 if you have a 28-day cycle — right in the middle of your menstrual cycle. It lasts about 24 hours. After a day, the egg will die or dissolve if it isn’t fertilized.

**Luteal phase**

In this stage this structure releases hormones, mainly progesterone and some estrogen. The rise in hormones keeps your uterine lining thick and ready for a fertilized egg to implant. During this phase, if you don’t get pregnant, you may experience symptoms of premenstrual syndrome (PMS). These include:

* Bloating
* Breast swelling, pain, or tenderness
* Mood changes
* Headache
* Weight gain
* Changes in sexual desire
* Food cravings
* Trouble sleeping
* The luteal phase lasts for 11 to 17 days.
* During most of the luteal phase, the estrogen level is high. Estrogen also stimulates the endometrium to thicken.

The increase in estrogen and progesterone levels causes milk ducts in the breasts to widen (dilate). As a result, the breasts may swell and become tender.

If the fertilized egg does not implant, the corpus luteum degenerates after 14 days, levels of estrogen and progesterone decrease, and a new menstrual cycle begins.

If the embryo is implanted, the cells around the developing embryo begin to produce a hormone called human chorionic gonadotropin. This hormone maintains the corpus luteum, which continues to produce progesterone, until the growing fetus can produce its own hormones. Pregnancy tests are based on detecting an increase in the human chorionic gonadotropin level.