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#### (1a) CYCLIC CHANGE IN BREAST

As you age, the tissue and structure of your breasts begin to change. This is due to differences in your reproductive hormone levels caused by the natural process of aging. As a result of these changes, your breasts begin to lose their firmness and fullness.

Also with age comes an increased risk of developing growths in the breasts, such as fibroids, cysts, and cancer. Keep in mind that women of any age can develop these conditions. Give yourself regular self examination.breast can go through changes during a menstrual cycle. They get tender, and even seem to shift a bit in size and shape.

Chalk it up to the ebb and flow of hormones such as estrogen and progesterone over the course of your cycle.

Breast symptoms are the strongest just before your period starts, and improve either during or right after it.

- \* Swelling
- \* Tenderness
- \* Aches
- \* Soreness
- \* Changes in texture.
- \* downward pointing nipples
- \* an elongated, stretched, or flattened appearance
- \* wider space between the breasts
- \* lumpiness, which may be due to benign fibrocystic changes in the breast or serious conditions like breast cancer

#### (1b) CYCLIC CHANGE IN VAGINA

The vagina epithelium is the inner lining of the vagina consisting of multiple layers of (squamous)cells.The basal membrane provides the support for the first layer of the epithelium-the basal layer. The intermediate layers lie upon the basal layer and the superficial layer is the outermost layer of the epithelium.Anatomists have described the epithelium as consisting of as many as 40 distinct layers.The mucus found on the epithelium is secreted by the cervix and uterus.The rugae of the epithelium create an involuted surface and result in a large surface area that covers 360 cm<sup>3</sup>.This large surface area allows the trans-epithelial absorption of some medications via the vaginal route.

In the course of the reproductive cycle, the vaginal epithelium is subject to normal, cyclic changes, that are influenced by estrogen: with increasing circulating levels of the hormones there is proliferation of epithelial cells along with an increase in the number of cell layers. As cells proliferate and mature, they undergo partial cornification. Although hormone induced changes occur in the other tissues and organs of the female reproductive system, the vaginal epithelium is more sensitive and its structure is an indicator of estrogen levels. Some langerhans cell and melanocytes are also present in the epithelium. The epithelium of the ectocervix is contiguous with that of the vagina, possessing the same properties and function. The vaginal epithelium is divided into layers of cells, including the basal layer, the parabasal cells, the superficial squamous flat cells, and the intermediate cells. The superficial cells exfoliate continuously and basal cells replace the superficial cells that die and slough off from the stratum corneum. Under the stratum corneum is the stratum granulosum and stratum spinosum. The cells of the vaginal epithelium retain a usually high level of glycogen compared to other epithelial tissue in the body. The surface patterns on the cells themselves are circular and arranged in longitudinal rows. The epithelial cells of the uterus possess some of the same characteristics of the vaginal epithelium.

## (2) HORMONE REGULATION OF THE MENSTRUAL CYCLE




Menstruation is the shedding of the lining of the uterus (endometrium) accompanied by bleeding. It occurs in approximately monthly cycles throughout a woman's reproductive life, except during pregnancy. Menstruation starts during puberty (at menarche) and stops permanently at menopause.

By definition, the menstrual cycle begins with the first day of bleeding, which is counted as day 1. The cycle ends just before the next menstrual period. Menstrual cycles normally range from about 25 to 36 days. Only 10 to 15% of women have cycles that are exactly 28 days. Also, in at least 20% of women, cycles are irregular. That is, they are longer or shorter than the normal range. Usually, the cycles vary the most and the intervals between periods are longest in the years immediately after menstruation starts (menarche) and before menopause.

Menstrual bleeding lasts 3 to 7 days, averaging 5 days. Blood loss during a cycle usually ranges from 1/2 to 2 1/2 ounces. A sanitary pad or tampon, depending on the type, can hold up to an ounce of blood. Menstrual blood, unlike blood resulting from an injury, usually does not clot unless the bleeding is very heavy.

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.

The menstrual cycle has three phases:

- \*  Follicular (before release of the egg)
- \*  Ovulatory (egg release)
- \*  Luteal (after egg release)

The menstrual cycle is regulated by the complex interaction of hormones: luteinizing hormone, follicle-stimulating hormone, and the female sex hormones estrogen and progesterone.

The menstrual cycle has three phases:

- \* Follicular (before release of the egg)
- \* Ovulatory (egg release)
- \* Luteal (after egg release)

The menstrual cycle begins with menstrual bleeding (menstruation), which marks the first day of the follicular phase.

When the follicular phase begins, levels of estrogen and progesterone are low. As a result, the top layers of the thickened lining of the uterus (endometrium) break down and are shed, and menstrual bleeding occurs. About this time, the follicle-stimulating hormone level increases slightly, stimulating the development of several follicles in the ovaries. Each follicle contains an egg. Later in this phase, as the follicle-stimulating hormone level decreases, only one follicle continues to develop. This follicle produces estrogen.

The ovulatory phase begins with a surge in luteinizing hormone and follicle-stimulating hormone levels. Luteinizing hormone stimulates egg release (ovulation), which usually occurs 16 to 32 hours after the surge begins. The estrogen level decreases during the surge, and the progesterone level starts to increase.

During the luteal phase, luteinizing hormone and follicle-stimulating hormone levels decrease. The ruptured follicle closes after releasing the egg and forms a corpus luteum, which produces progesterone. During most of this phase, the estrogen level is high. Progesterone and estrogen cause the lining of the uterus to thicken more, to prepare for possible fertilization.

If the egg is not fertilized, the corpus luteum degenerates and no longer produces progesterone, the estrogen level decreases, the top layers of the lining break down and are shed, and menstrual bleeding occurs (the start of a new menstrual cycle).

If the egg is fertilized, the corpus luteum continues to function during early pregnancy. It helps maintain the pregnancy.