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 ENGINEERING

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1. CYCLIC PROCESS OF THE BREAST

 2. CYCLIC PROCESS OF THE

VAGINA

 3. MENSTRUATION CYCLE

1.CYCLIC CHANGES IN BREAST

Each month, women go through changes in the hormones that make up the normal menstrual cycle. The hormone oestrogen is produced by the ovaries in the first half of the menstrual cycle. It stimulates the growth of milk ducts in the breasts. The increasing level of oestrogen leads to ovulation halfway through the cycle. Next, the hormone progesterone takes over in the second half of the cycle. It stimulates the formation of the milk glands. These hormones are believed to be responsible for the cyclical changes that many women feel in their breasts just before menstruation. These include swelling, pain, and soreness. During menstruation, many women also have changes in breast texture. Their breasts may feel very lumpy. This is because the glands in the breast are enlarging to get ready for a possible pregnancy. If pregnancy does not happen, the breasts go back to normal size. Once menstruation starts, the cycle begins again.

 2.CYCLIC CHANGES IN THE VAGINA

During the menstrual cycle definite proliferative and destructive changes occur in the human vaginal epithelium. In the first days after the beginning of the last menstrual period a division of the vaginal epithelium into three layers is noticeable. This is more strikingly marked during the premenstrual period. In the course of the reproductive cycle, the vaginal epithelium is subject to normal, cyclic changes, that are influenced by oestrogen: with increasing circulating levels of the hormone, 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 oestrogen levels. Some Langerhans cells 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 cells, 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 stratus 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.

3)Menstrual Cycle

 The menstrual cycle  is the regular natural change that occurs in the female reproductive system (specifically the uterus and ovaries) makes pregnancy possible. The cycle is required for the production of oocytes, and for the preparation of the uterus for pregnancy. The menstrual cycle occurs due to the rise and fall of oestrogen. This cycle results in of the lining of the uterus, and the growth of an egg, (which is required for pregnancy. The egg is released from an ovary around day fourteen in the cycle; the thickened lining of the uterus provides nutrients  to an embryo after implantation. If pregnancy does not occur, the lining is released in what known as menstruation Up to 80% of women report having some symptoms during the one to two weeks prior to menstruation; Common symptoms include acne, tender breasts, bloating, feeling tired, irritability and mood changes. These symptoms interfere with normal life and therefore qualify as premenstrual syndrome in 20 to 30% of women. In 3 to 8%, they are severe . The first period usually begins between twelve and fifteen years of age, a point in time known as menarche. They may occasionally start as early as eight, and this onset may still be normal. The average age of the first period is generally later in the developing world and earlier in developed world. The typical length of time between the first day of one period and the first day of the next is 21 to 45 days in young women and 21 to 35 days in adults (an average of 28) day Menstruation stops occurring 35 day menopause which usually occurs between 45 and 55 years of age . Bleeding usually lasts around 3 to 7 days.

The menstrual cycle is governed by hormonal changes. These changes can be altered by using normal birth control to prevent pregnancy Each cycle can be divided into three phases based on events in the ovary (ovarian cycle) or in the uterus (uterine cycle). The ovarian cycle consists of the follicular phase, ovulation, and and litera phase  whereas the uterine cycle is divided into menstruation, proliferative phase, and secretory phase.

Stimulated by gradually increasing amounts of oestrogen in the follicular phase, discharges of blood (menses) flow, the dominant follicle releases an ovocyte in an event called ovulation. After ovulation, the ovocyte only lives for 24 hours or less without fertilization while the remains of the dominant follicle in the ovary become corpus lutheum; this body has a primary function of producing large amounts of progesterone. Under the influence of progesterone, the uterine lining changes to prepare for potential implantation of an embryo to establish a pregnancy. If implantation does not occur within approximately two weeks, the corpus luteum will involute, causing a sharp drop in levels of both progesterone and oestrogen. The hormone drop causes the uterus to shed its lining in a process termed menstruation.