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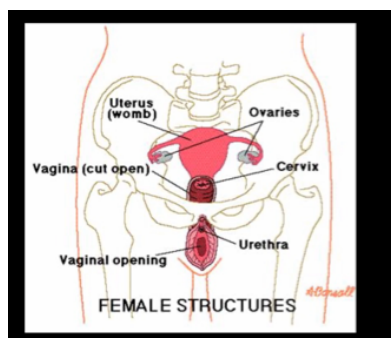
DEPARTMENT: NURSING

COURSE CODE: PHS212

COURSE TITLE: PHYSIOLOGY

Describe the Cyclic Change in Vagina

Vagina is a short tubular organ. It is lined by mucus membrane, which is formed by stratified epithelial cells.



The vagina is the tube between the vulva and the cervix. This tube is the connection between your uterus and the outside world. The vagina is what babies exit through during birth, and what menstrual blood exits through during your period. The vagina is also used for insertion, such as with a penis, fingers, female condoms, sex toys, tampons, or menstrual cups.

The vagina can also act as a route to other parts of the body. During penis-vagina sex, ejaculate is deposited in the vagina, allowing sperm to enter the uterus through the cervix. The walls of the vagina can also be used as an administrative route for medications and contraceptives, such as intervaginal hormone creams, the hormonal vaginal contraceptive ring, or vaginal suppository medications.

Anatomy of the vagina

The vagina is much more than just a tube. When it is in a relaxed state (not aroused), the walls of the vagina are collapsed against each other, flattened by the pressure of the surrounding organs and tissues within the pelvis. During this state, a cross-section of the vaginal canal (the vaginal lumen) can resemble an “H” or a “W” shape, as the walls flatten against themselves. From the sides, the vagina offers movable support and pressure, which allow your tampon to stay in place.

The walls of the vagina are covered by many folds called rugae. The walls and folds of the vagina have many purposes, providing both a barrier and access route between the cervix and the outside world. All of these folds allow the vagina to be stretched and expand like an accordion when pressure is applied to the sides (like when a baby’s head is passing through).

The walls of the vagina are composed of different layers of tissue. The surface layers of the vaginal wall are made of mucosal tissue—similar to the tissue that lines your mouth, nose, and digestive tract. Underneath the mucosal tissue are layers of smooth muscle tissue, collagen, and elastin fibers, which give the vagina both structure and ability to stretch.

Fluids are released through the walls of the vagina to keep the area moist, and during times of sexual arousal, to increase lubrication. The vagina is also capable of absorbing some substances such as medications, hormonal creams, or contraceptives into the body.

How the vagina changes during the menstrual cycle

The vagina also changes in response to hormonal fluctuations of the menstrual cycle. Around mid-cycle, when estrogen is highest, vaginal tissue becomes thicker and fuller.

The cervix, at the top of the vagina, moves and changes shape throughout the cycle. Before and after the fertile window, the cervix is low and can be felt in the vagina, with a firm texture, and the hole in the center of the cervix is closed. During the fertile window, the hole in the cervix opens to facilitate the entrance of sperm into the uterus, the cervix rises higher in the vagina, and is softer when touched.

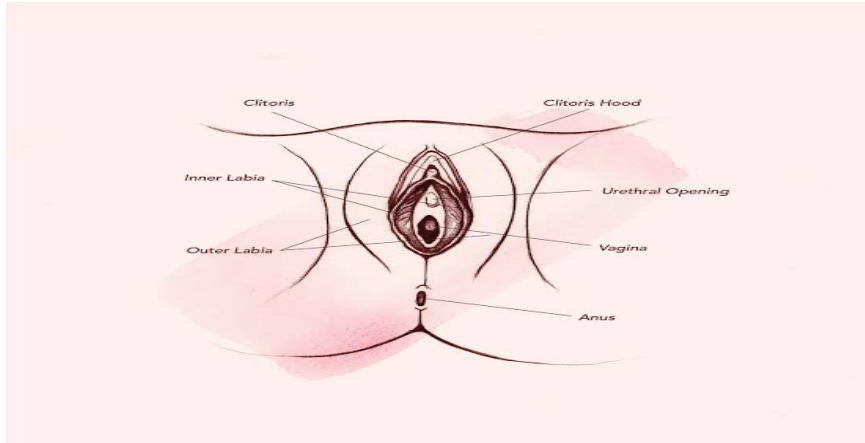
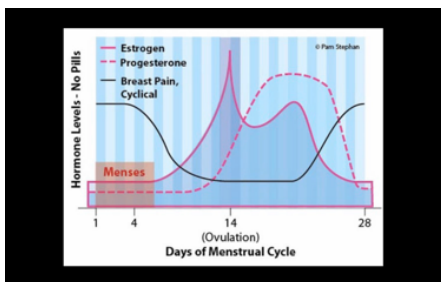


Diagram of the vagina

Describe the Cyclic Change in breast



Breast development is a vital part of a woman's reproduction. Breast development happens in certain stages during a woman's life: first before birth, again at puberty, and later during the childbearing years. Changes also happen to the breasts during the menstrual cycle and when a woman reaches menopause.

When does breast development begin?

Breasts begin to form while the unborn baby is still growing in the mother's uterus. This starts with a thickening in the chest area called the mammary ridge or milk line. By the time a baby girl is born, nipples and the beginnings of

the milk-duct system have formed.

Breast changes continue to happen over a woman's life. The first thing to develop are lobes, or small subdivisions of breast tissue. Mammary glands develop next and consist of 15 to 24 lobes. Mammary glands are influenced by hormones activated in puberty. Shrinkage (involution) of the milk ducts is the final major change that happens in the breast tissue. The mammary glands slowly start to shrink. This often starts around age 35.

Cross section of breast.

As a girl approaches her teen years, the first visible signs of breast development begin. When the ovaries start to produce and release (secrete) estrogen, fat in the connective tissue starts to collect. This causes the breasts to enlarge. The duct system also starts to grow. Often these breast changes happen at the same that pubic hair and armpit hair appear.

Once ovulation and menstruation begin, the maturing of the breasts begins with the formation of secretory glands at the end of the milk ducts. The breasts and duct system continue to grow and mature, with the development of many glands and lobules. The rate at which breasts grow is different for each young woman.

Female breast developmental stages Description

Stage 1 Preteen. Only the tip of the nipple is raised.

Stage 2 Buds appear, and breast and nipple are raised. The dark area of skin around the nipple (the areola) gets larger.

Stage 3 Breasts are slightly larger, with glandular breast tissue present.

Stage 4 The areola and nipple become raised and form a second mound above the rest of the breast.

Stage 5 Mature adult breast. The breast becomes rounded and only the nipple

is raised.

Each month, women go through changes in the hormones that make up the normal menstrual cycle. The hormone estrogen 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 estrogen 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.

Many healthcare providers believe the breasts are not fully mature until a woman has given birth and made milk. Breast changes are one of the earliest signs of pregnancy. This is a result of the hormone progesterone. In addition, the dark areas of skin around the nipples (the areolas) begin to swell. This is followed by the rapid swelling of the breasts themselves. Most pregnant women feel soreness down the sides of the breasts, and nipple tingling or soreness. This is because of the growth of the milk duct system and the formation of many more lobules.

By the fifth or sixth month of pregnancy, the breasts are fully capable of producing milk. As in puberty, estrogen controls the growth of the ducts, and progesterone controls the growth of the glandular buds. Many other hormones also play vital roles in milk production. These include follicle-stimulating hormone (FSH), luteinizing hormone (LH), prolactin, oxytocin, and human placental lactogen (HPL).

Other physical changes happen as well. These include the blood vessels in the breast becoming more visible and the areola getting larger and darker. All of

these changes are in preparation for breastfeeding the baby after birth.

By the time a woman reaches her late 40s and early 50s, perimenopause is starting or is well underway. At this time, the levels of estrogen and progesterone begin to change. Estrogen levels dramatically decrease. This leads to many of the symptoms commonly linked to menopause. Without estrogen, the breast's connective tissue becomes dehydrated and is no longer elastic. The breast tissue, which was prepared to make milk, shrinks and loses shape. This leads to the "saggy" breasts associated with women of this age.

Women who are taking hormone therapy may have some of the premenstrual breast symptoms that they had while they were still menstruating, such as soreness and swelling. But if a woman's breasts were saggy before menopause, this will not change with hormone therapy.

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 drop and 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.

Menstruation is bleeding from the vagina that happens about once a month, as a normal part of the menstrual cycle. It is also known as having a period. 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. If you don't become pregnant, your periods start about two weeks after you ovulate. The lining of the uterus falls away and, along with some blood, flows out through the vagina. Periods can be light or heavy, and the blood can range from bright red to dark brown. You might also notice small clots.

When do girls start their period?

Girls have their first period during puberty. Most often that is around the age 12 or 13 years old, but girls can start menstruating as young as 9, or as late as 16.

bleeding. When you menstruate, your body sheds the lining of the uterus (womb). Menstrual blood flows from the uterus through the small opening in the cervix and passes out of the body through the vagina. Most menstrual periods last from 3 to 5 days.

How long do periods last?

Menstruation affects every woman, but the experience can differ between women. When periods (menstruations) come regularly, this is called the menstrual cycle. Having regular menstrual cycles is a sign that important parts of your body are working normally. The menstrual cycle provides important body chemicals, called hormones, to keep you healthy. It also prepares your body for pregnancy each month. A cycle is counted from the first day of 1 period to the first day of the next period. The average menstrual cycle is 28 days long. Cycles can range anywhere from 21 to 35 days in adults and from 21 to 45 days in young teens. The rise and fall of levels of hormones during the month control the menstrual cycle.

2. Hormonal Regulation of Menstrual Cycle

The menstrual cycle is a cycle of events that occurs in the womb (uterus) and ovaries of female mammals. It is associated with the production of eggs and preparing the uterus for the implantation of fertilised eggs.

The menstrual cycle occurs over a period of about 28 days. The changes during the cycle are due to four hormones, progesterone, oestrogen, FSH (follicle stimulating hormone) and LH (luteinising hormone). Progesterone and oestrogen have wide ranging effects on the body but in the context of the

menstrual cycle progesterone is mainly involved in maintaining the lining of the uterus and oestrogen is mainly concerned with building up the lining of the uterus. FSH stimulates the production of eggs and LH stimulates the release of the egg. FSH and LH are produced by the pituitary gland in the brain.

There are four stages in the menstrual cycle.

Stage1. Days 1-4. Menstruation (bleeding) occurs. The lining of the uterus disintegrates and is shed. This is due to low levels of progesterone.

Stage2. Days 4-14. The uterine lining grows back. This is due to high levels of oestrogen.

Stage3. Day 14. The egg (called an ovum) is released. This is due to LH.

Stage4. Days 14-28. The lining of the uterus is maintained in case the egg becomes fertilised and implanted in the uterus. Maintenance of the lining is due to high levels of progesterone.

The four hormones interact with each other. FSH causes Oestrogen release and oestrogen inhibits FSH. LH stimulates both oestrogen and progesterone production. Before ovulation LH release is stimulated by oestrogen but after ovulation it is inhibited by both oestrogen and progesterone.

In summary, the hormones have the following effects:

Oestrogen: causes growth of the uterine lining. Inhibits FSH. Stimulates release of LH and hence release of the egg. Inhibits LH after ovulation.

Progesterone: maintains the uterine lining. Inhibits LH after ovulation.

LH: Stimulates the release of the egg (called ovulation). Stimulates oestrogen and progesterone production.

FSH: Stimulates egg development and the release of oestrogen.

Birth control tablets contain high levels of progesterone and oestrogen. The oestrogen inhibits FSH production so that eggs cease to develop.

FSH is used to treat infertility because it stimulates the production of eggs.

Learning the menstrual cycle [Edit](#)

The menstrual cycle is easy to learn. The best approach is probably to break it down into parts.

Menstrual cycle - stages and changes in uterus

Menstrual cycle - changes in oestrogen and progesterone.

Clinical significance

A female has an average of 450 menses throughout her lifetime; therefore, it is important to understand the menstrual cycle and its physiology because of the various complications, consequences, and distress that it may have for a female patient. A female presenting with primary or secondary amenorrhea will need to undergo clinical testing to diagnose the reason, but reasonable testing from the level of the ovaries to the hypothalamus cannot be performed unless a clinician thoroughly understands the hormone feedback system. Additionally, there may be problems with her menses itself such as premenstrual syndrome, hm dysmenorrhea, or menorrhagia. Without an understanding of the female anatomy and menstrual cycle physiology, a clinician would be unable to obtain a complete history and physical to allow understanding of the underlying cause. Infertility is a prominent issue in our society, and the menstrual cycle is the basis for how a woman's body prepares for pregnancy, so each patient's menstrual cycle must be evaluated as a possible area of concern for her infertility. As clinicians, we must understand the menstrual cycle in its entirety to provide relevant clinical care to our female patients.

References

1. Physiology textbook

2. Wikipedia

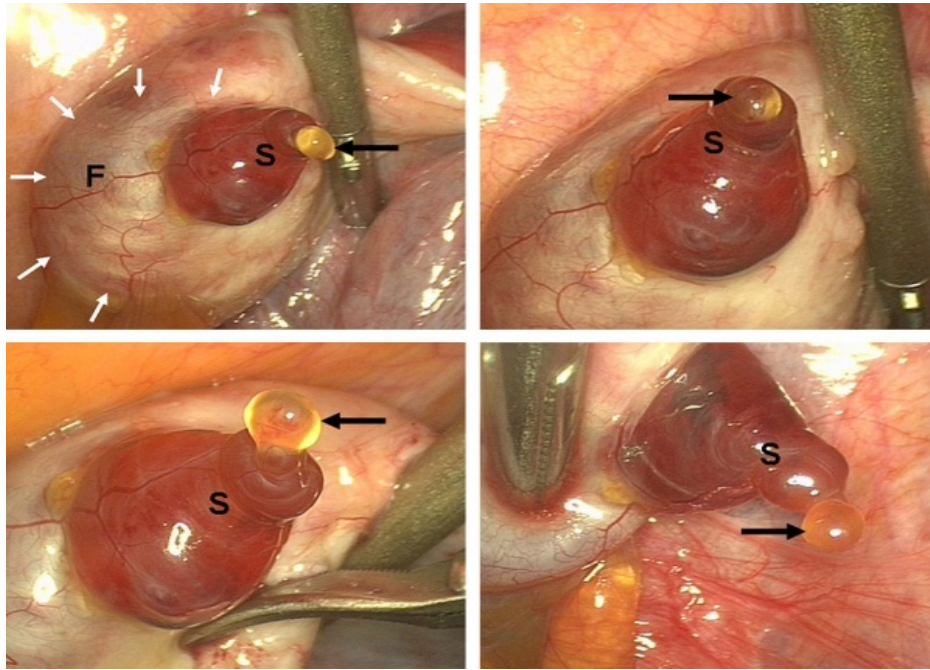


Diagram of the human ovary undergoing ovulation.