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18/ENG08/024

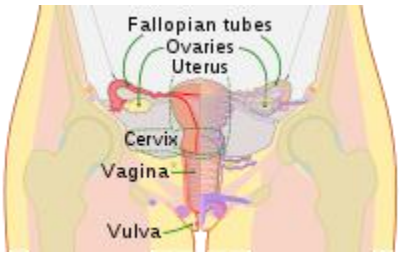
BIOMEDICAL ENGINEERING

PHYSIOLOGY

PHS 212

- **CERVIX**: The cervix is part of the female reproductive system. Around 2–3 centimeter in length,[1] it is the lower narrower part of the uterus continuous above with the broader upper part—or body—of the uterus. The lower end of the cervix bulges through the anterior wall of the vagina, and is referred to as the vaginal portion of cervix (or ectocervix) while the rest of the cervix above the vagina is called the supravaginal portion of cervix. A central canal, known as the cervical canal, runs along its length and connects the cavity of the body of the uterus with the lumen of the vagina. As a component of the female reproductive system, the cervix is derived from the two paramesonephric ducts (also called Müllerian ducts), which develop around the sixth week of embryogenesis. During development, the outer parts of the two ducts fuse, forming a single urogenital canal that will become the vagina, cervix and uterus.The cervix grows in size at a smaller rate than the body of the uterus, so the relative size of the cervix over time decreases, decreasing from being much larger than the body of the uterus in fetal life, twice as large during childhood, and decreasing to its adult size, smaller than the uterus, after puberty. Previously it was thought that during fetal development, the original squamous epithelium of the cervix is derived from the urogenital sinus and the original columnar epithelium is derived from the paramesonephric duct. The point at which these two original epithelia meet is called the original squamocolumnar junction.
- VAGINA: the normal variations that may occur in the vagina of normal macaques as a result of aging or changes in the menstrual cycle. This study was conducted to determine if differences occur in the thickness of the vaginal mucosa with age or menses.in mammals, the **vagina** is the elastic,

muscular part of the female genital tract. In humans, it extends from the vulva to the cervix. The outer vaginal opening is normally partly covered by a membrane called the hymen. The length of the vagina varies among women of child-bearing age. Because of the presence of the cervix in the front wall of the vagina, there is a difference in length between the front wall, approximately 7.5 cm (2.5 to 3 in) long, and the back wall, approximately 9 cm (3.5 in) long. During sexual arousal, the vagina expands both in length and width.

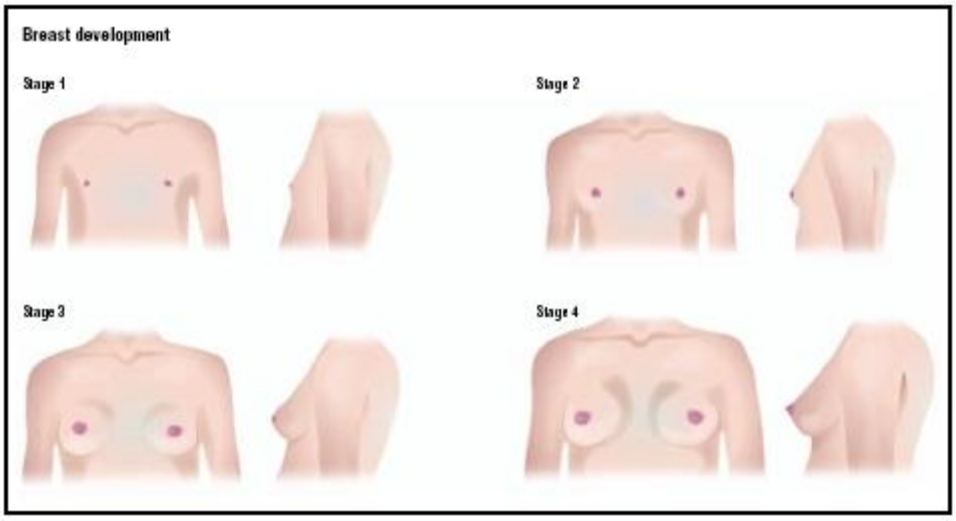


During development, the vaginal plate begins to grow where the fused ends of the paramesonephric ducts (Müllerian ducts) enter the back wall of the urogenital sinus as the sinus tubercle. There are conflicting views on the embryologic origin of the vagina. The majority view is Koff's 1933 description, which posits that the upper two-thirds of the vagina originate from the caudal part of the Müllerian duct, while the lower part of the vagina develops from the urogenital sinus. Other views are Bulmer's 1957's description that the vaginal epithelium derives solely from the urogenital sinus epithelium, and Witschi's 1970 research, which reexamined Koff's description and concluded that the sinovaginal bulbs are the same as the lower portions of the Wolffian ducts.

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. he first stage of breast development begins at about six weeks of fetal development with a thickening called the mammary ridge or the milk line. By six months of development, this ridge extends all the way down to the groin, but then regresses. Solid columns of cells form from each breast bud, with each column becoming a separate sweat gland. Each of these has its own separate duct

leading to the nipple. By the final months of fetal development, these columns have become hollow, and by the time a female infant is born, a nipple and the beginnings of the milk-duct system have formed.

As a girl approaches puberty, the first outward signs of breast development begin to appear. When the ovaries start to secrete estrogen, fat in the connective tissue begins to accumulate causing the breasts to enlarge and the duct system begins to grow. Breast development normally begins about one to two years before the menstrual



The four stages of breast development. In Stage 1 shows the flat breasts of childhood. By Stage 2, breast buds are formed as milk ducts and fat tissue develop. In Stage 3, the breast become round and full, and the areola darkens. Stage 4 shows fully mature breasts.

period begins. Usually these signs are accompanied by the appearance of pubic hair and hair under the arms.

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 varies significantly and is different for each young woman.

MENSTRAL CYCLE: menstruation (also termed period or bleeding) is the process in a woman of discharging (through the vagina) blood and other materials from the lining of the uterus at about one monthly interval from puberty until menopause (ceasing of regular menstrual cycles), except during pregnancy. This discharging process lasts about 3-5 days. 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, also known as a **period** or **monthly**, is the regular discharge of blood and mucosal tissue (known as menses) from the inner lining of the uterus through the vagina.The first period usually begins between twelve and fifteen years of age, Menstruation stops occurring after menopause, which usually occurs between 45 and 55 years of age.Periods also stop during pregnancy and typically do not resume during the initial months of breastfeeding

Your menstrual cycle begins on the first day of your period and continues up to the first day of your next period.

You're most fertile at the time of ovulation (when an egg is released from your ovaries), which usually occurs 12 to 14 days before your next period starts. This is the time of the month when you're most likely to get pregnant.

It's unlikely that you'll get pregnant just after your period, although it can happen. It's important to remember that sperm can sometimes survive in the body for up to 7 days after you have sex.

This means it may be possible to get pregnant soon after your period finishes if you ovulate early, especially if you have a naturally short menstrual cycle.

You should always use contraception when you have sex if you don't want to become pregnant.

Health effects

- Cramps
- Mood and behavior
- Bleeding