An –Najah National University
Faculty of Medicine and Health Science
Nursing & Midwifery Department

Women's Health Assessment:
1. Reasons for entering the health care system

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- Women’s health assessment and screening focus on a systems evaluation beginning with a careful history and physical examination.

- Nursing care includes assessment, planning, education, counseling, and referral as needed. This enables women to make informed decisions about their own health care.

Preconception Counseling

- Preconception health promotion provides women and their partners with information that is needed to make decisions about their reproductive future.
- Preconception counseling guides couples on how to prevent unintended pregnancies. It also include stresses and risk management and identifies healthy behaviors that promote the well-being of the woman and her potential fetus.

- The activities that promote healthy mothers and babies must occur before the period of critical fetal organ development , which is **between 17 and 56 days** after fertilization.
- By the end of the eight week after conception and certainly by the end of the first trimester, any major structural anomalies in the fetus are already present.
- **Preconception care** is important for woman who have had a problem with a previous pregnancy (e.g., miscarriage, preterm birth).
- Preconception care is important to minimize fetal malformations.
- Counseling can allow for behavior modification before damage is done or a women can make an informed decision about her willingness to accept potential hazards.

Example of these hazards:

- Maternal Age
- Illnesses
- Teratogenic agents (environmental substances or exposures that result in functional or structural disability such as drugs, viruses, chemicals, or genetically inherited diseases).

In many instances, counseling can allow for behavior modification before damage is done or a woman can make an informed decision about her willingness to accept potential hazards (Postlethwaite, 2003).

- **Pregnancy**

It is highly desirable for a woman to enter prenatal care within the first 12 weeks of pregnancy. This allow for early pregnancy counseling.

- **Fertility Control and Infertility**
- **Menstrual problems**

Irregularities or problems with the menstrual period are among the most common concerns of women and often cause them to seek help.

Common menstrual disorders include amenorrhea, dysmenorrhea, endometriosis is a gynecological medical condition in which cells from the lining of the uterus (endometrium) appear and flourish outside the uterine cavity, and menorrhagia or metrorrhagia.

- **Perimenopause**

Barriers to seeking health care

1. Financial issues

Women use health services more often than do men but are more likely than men to have difficulty in financing the services.

2. Cultural issues

- Avoid physical examination unless necessary (privacy).
- Other women rely on their husbands to make major decisions.
- Religious beliefs (birth control).
- Some woman prefer folk medicine.

3. Gender issues

- Woman tend to use primary care services more often than men.
- Sex of the provider plays a role (studies have shown that female pt. have tests such as the Pap test and mammogram more consistently if they are seen by female providers).

Health risks in the childbearing years

Conditions and circumstances that increase health risks in the childbearing years :

1. Age

- Adolescence

• Female teenagers who enter the health care system usually do so for screening (Pap tests starts 3 years after sexual activity begins or by age 21).

• Gynecologic problems associated with menses, vaginitis, STIs, pregnancy.

- Teenage pregnancy

- Who is 16 years of age or younger often introduces additional stress into an already stressful developmental period.
- Children of teen mothers may be at risk for abuse or neglect because of the teen's inadequate knowledge of growth, development, and parenting.

- Parenthood after age 35 years

Risk for having a baby with certain genetic anomalies (e.g., Down syndrome).

2. Social and cultural factors

3. Substance use and abuse (smoking, alcohol, caffeine). **Prescription drugs** (psychotherapy drugs)**. Illicit drugs** (cocaine, heroin, marijuana).

4. Nutrition

- Obesity
- Overweight and obesity are known risk factors for diabetes, heart disease, stroke, HTN, some type of cancer (uterine, breast), menstrual irregularities, postterm pregnancy.
- Anorexia nervosa
- Bulimia nervosa

4. Physical fitness and exercise

5. Stress

6. Sexual practices (undesired pregnancy and STIs).

7. Medical conditions

- Certain medical conditions that occur during pregnancy can have severe effects on both mother and fetus (DM, UTI, HTN, thyroid disease). Effects on the fetus vary include (IUGR, stillbirth, prematurity, anemia, macrosomia).

8. Gynecologic conditions affecting pregnancy

- Gynecologic conditions may contribute negatively to pregnancy by causing infertility, miscarriage, preterm labor, and fetal and neonatal problems.
- For example, PID, STIs, vaginal infections, uterine fibroids, uterine deformities, endometriosis. Gynecologic cancer (cervical cancer, ovarian cancer, endometrial cancer. Other cancers (lung cancer, breast cancer, colon cancer).

9. Environmental and workplace hazards

- Environmental hazards can affect fertility, fetal development, live birth. For example (air pollutants, nose pollution, pesticides, poor preparation of food).

10. Violence against women

- Affecting over 4 million women each year in USA.
- It is the 2nd leading cause of injuries to women ages 15 to 44 in USA.

Health Assessment

- The woman's expected to fill out a form in the first visit includes (name, age, marital status, race, address, phone numbers, occupation, date of visit).
- Interview should be conducted in a private, comfortable, and relaxed setting and in an unhurried manner.
- Woman is addressed by her title and name.
- Nurse introduces her / his name.
- Phrase questions in a sensitive and nonjudgmental manner.
- Confidentiality
- Open ended question such as " what brings you to the hospital?

1. History

A medical history includes the following:

1. Identifying data
2. Chief complaints “ what symptom brought you here today?
3. History of present illness.
4. Past medical history

- Infectious diseases (MMR, TB, hepatitis).
- Chronic diseases (DM, cancer, stroke, CV).

5. Present health status

- Allergies
- Immunizations
- Screening test
- Environmental and chemical hazards (home, school, work).
- Use of safety measures
- Regular exercise
- Sleep patterns
- Diet including beverages
- Medications
- Caffeine

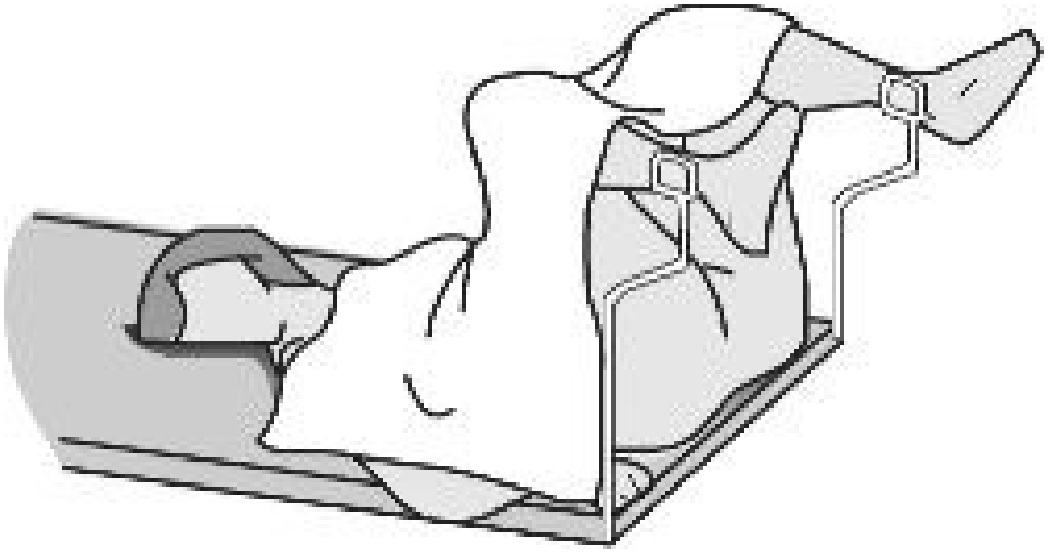
6. Past surgical history
7. Family history
8. Social history
9. Review of systems

3. Physical examination

- General appearance: age, dress, hygiene, alertness
- Vital sign
- Height and weight
- Skin
- Lymph nodes
- HEENT
- Breasts
- Respiratory
- Cardiac
- GI
- GU
- Vascular
- Endocrine (e.g., polyuria, polydipsia, polyphagia)
- Hematologic
- Musculoskeletal
- Neurological
- Psychiatric

A. Pelvic examination

- Woman assisted into lithotomy position for pelvic examination.



❑ External inspection

In good lighting, external genitals are inspected for sexual maturity, clitoris, labia, and perineum. After childbirth or other trauma.

❑ External palpation

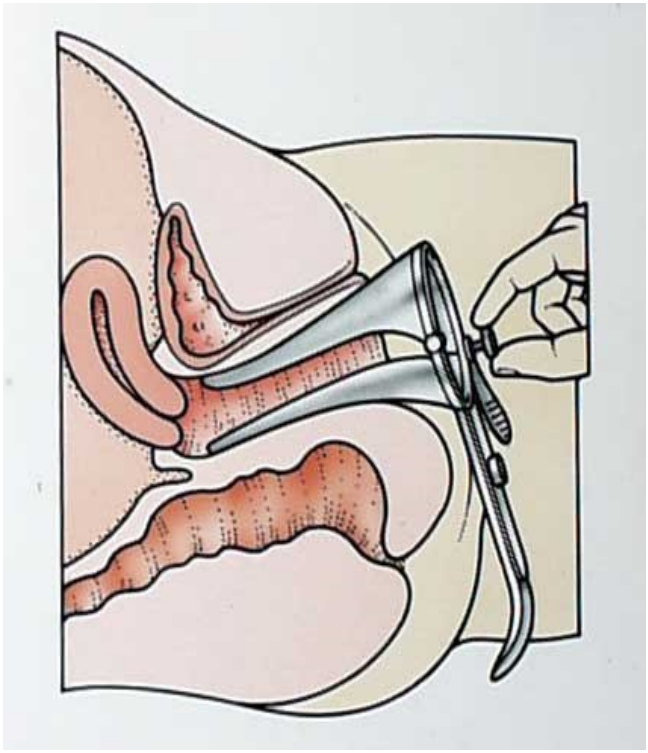
- Wear gloves
- Labia are spread apart to expose the structures in the vestibule: urinary meatus, Skene glands, vaginal orifice, and Bartholin glands, perineum, anus.

Vulvar self examination (VSE) or GSE.

❑ Internal examination

A vaginal speculum consist of two blades and a handle and comes in a variety of types and styles.

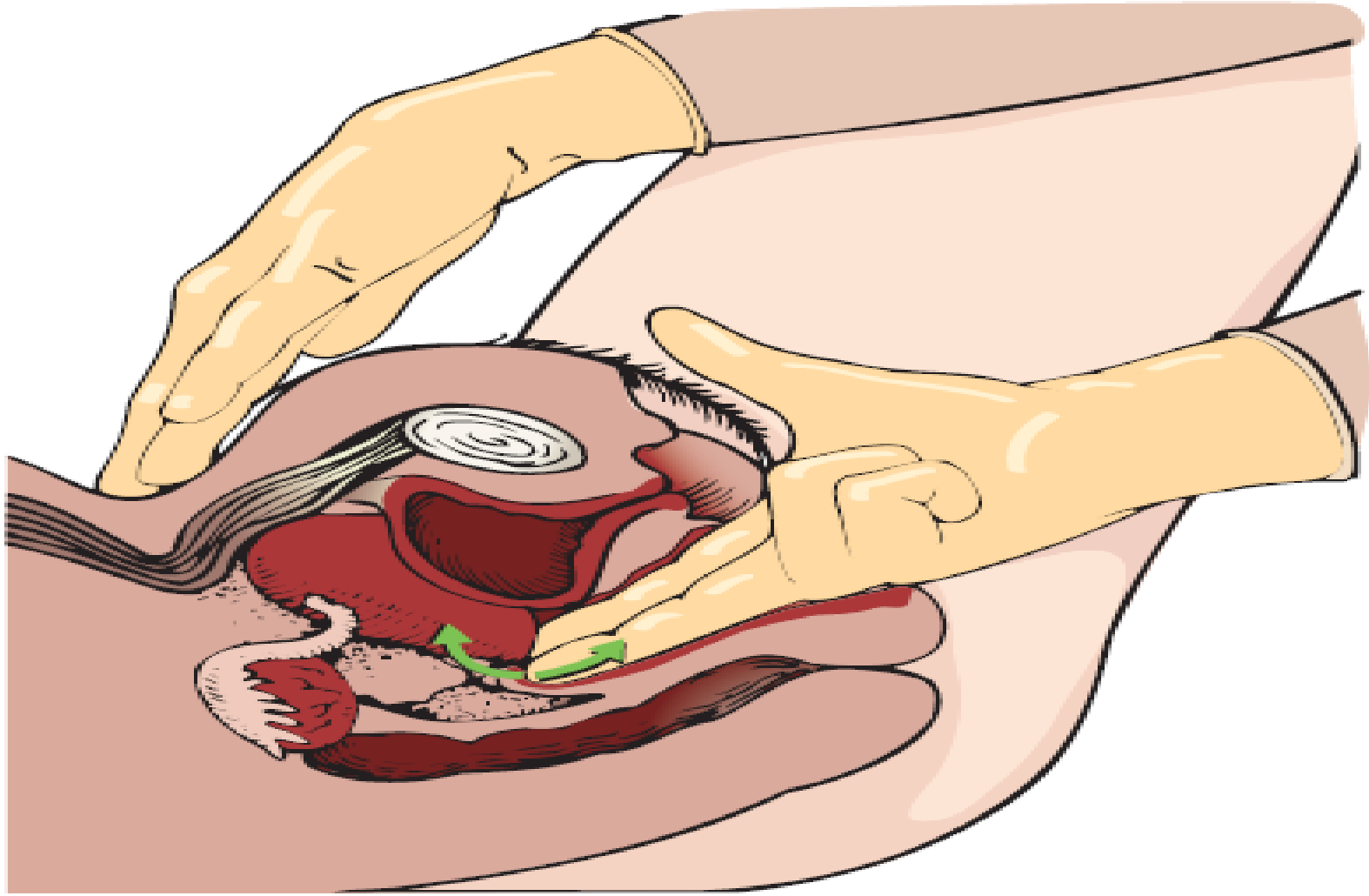
- A vaginal speculum to view the vaginal wall and cervix.
- Collection of specimens for cytologic examination if suspected with any infection.



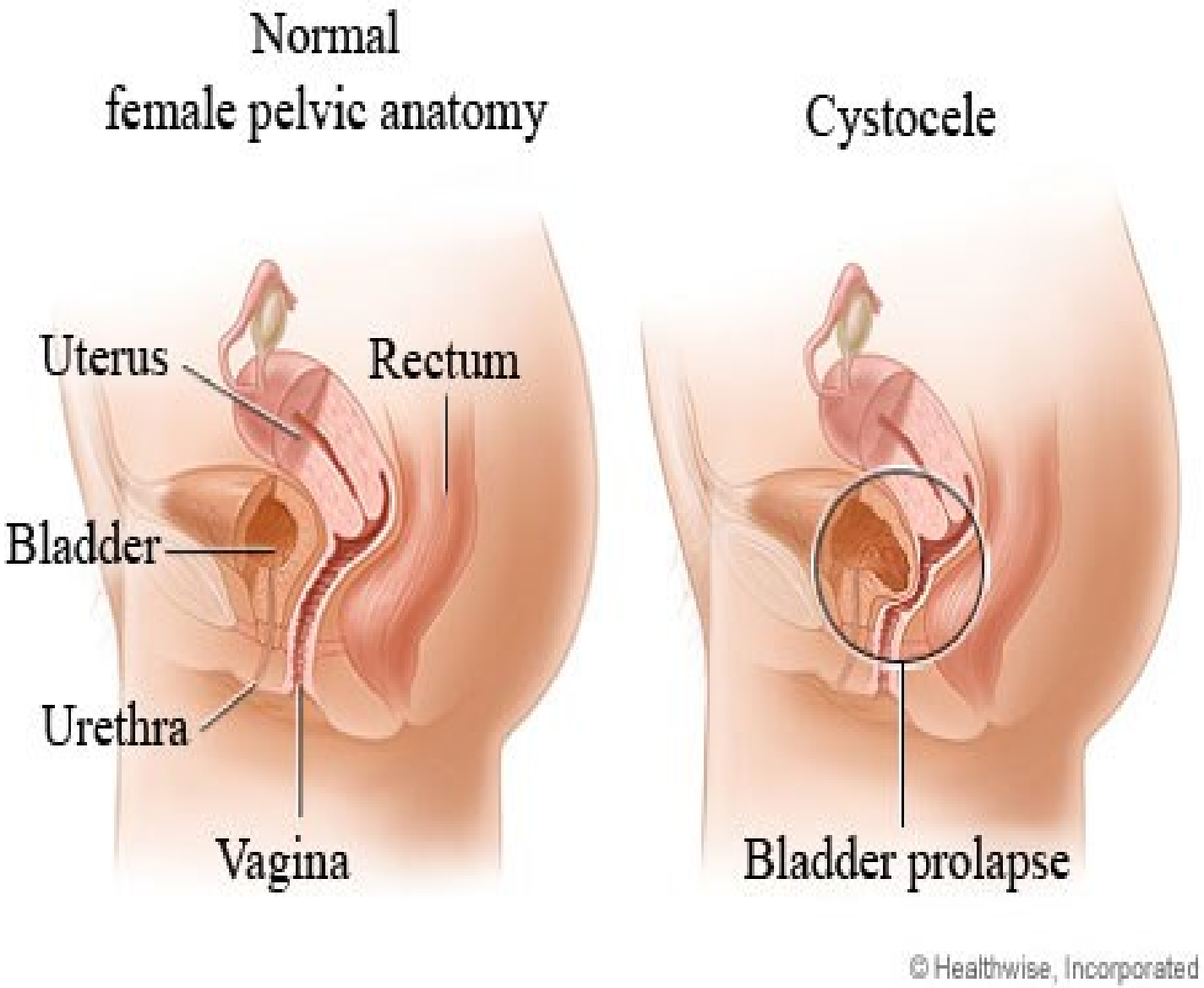
- **Bimanual palpation**

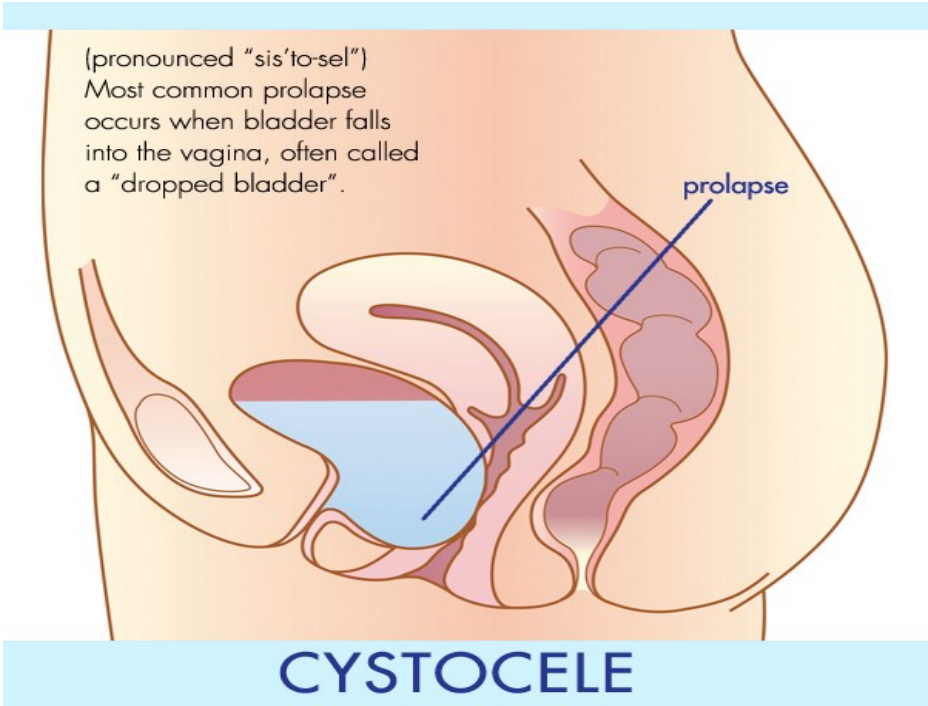
Upward pressure from the pelvic hand traps reproductive structures for assessment by palpation. Uterus assessed for position, size, shape, masses.

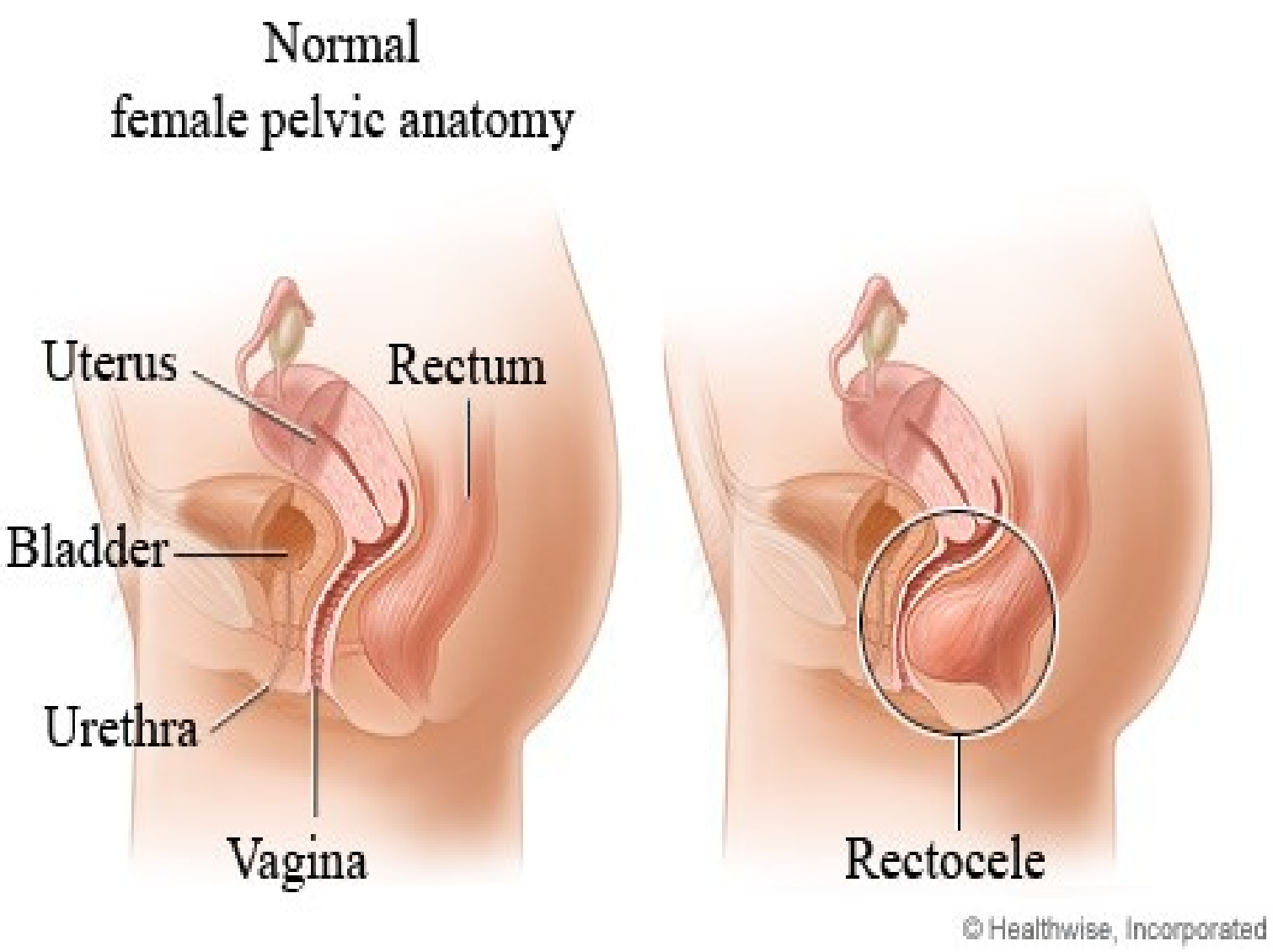
- Before intravaginal fingers are withdrawn, the woman is asked to tighten her vagina around the fingers as much as she can.



Bimanual palpation of the uterus.


Normal
female pelvic anatomy
Uterus
Rectum
Bladder
Urethra
Vagina
Cystocele
Bladder prolapse
© Healthwise, Incorporated


(pronounced "sis'to-sel")
Most common prolapse occurs when bladder falls into the vagina, often called a "dropped bladder".
prolapse
CYSTOCELE


Normal
female pelvic anatomy
Uterus
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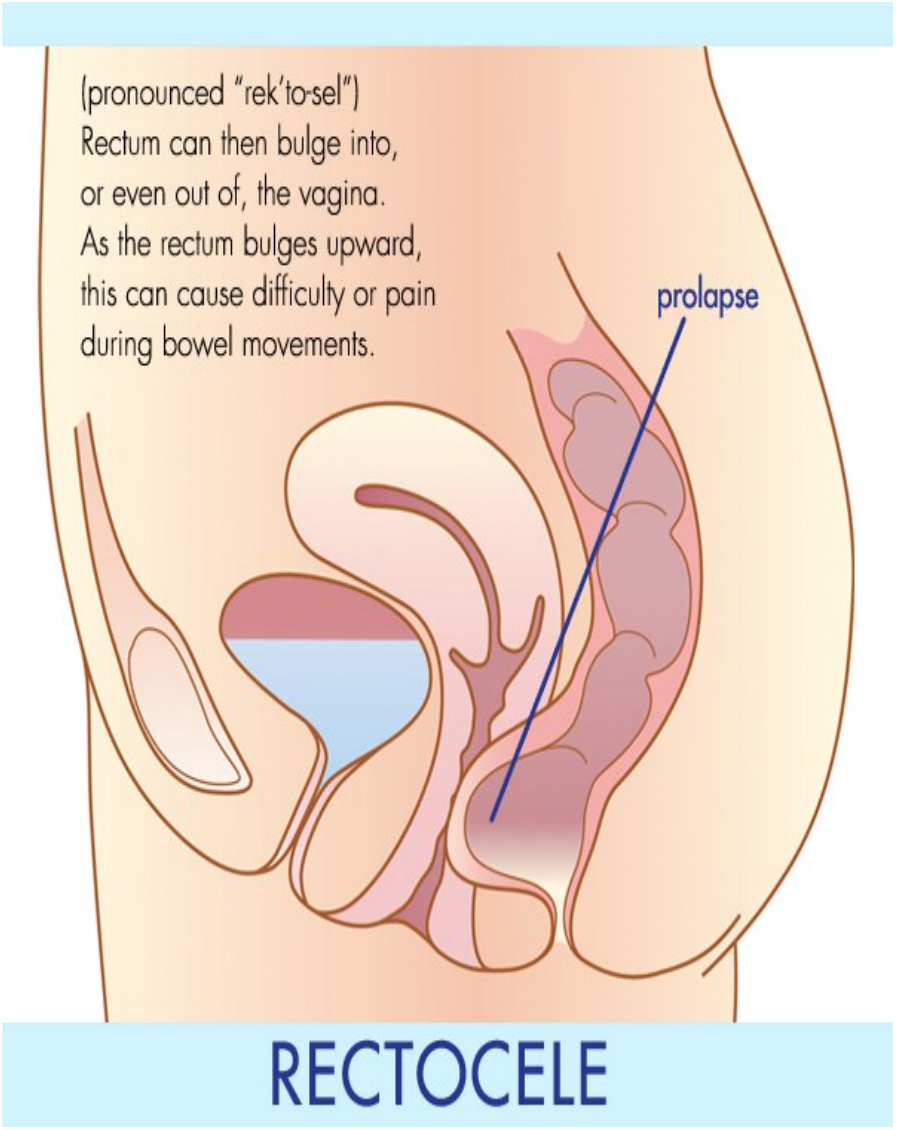
Rectocele
© Healthwise, Incorporated


(pronounced "rek'to-sel")
Rectum can then bulge into,
or even out of, the vagina.
As the rectum bulges upward,
this can cause difficulty or pain
during bowel movements.
prolapse
RECTOCELE

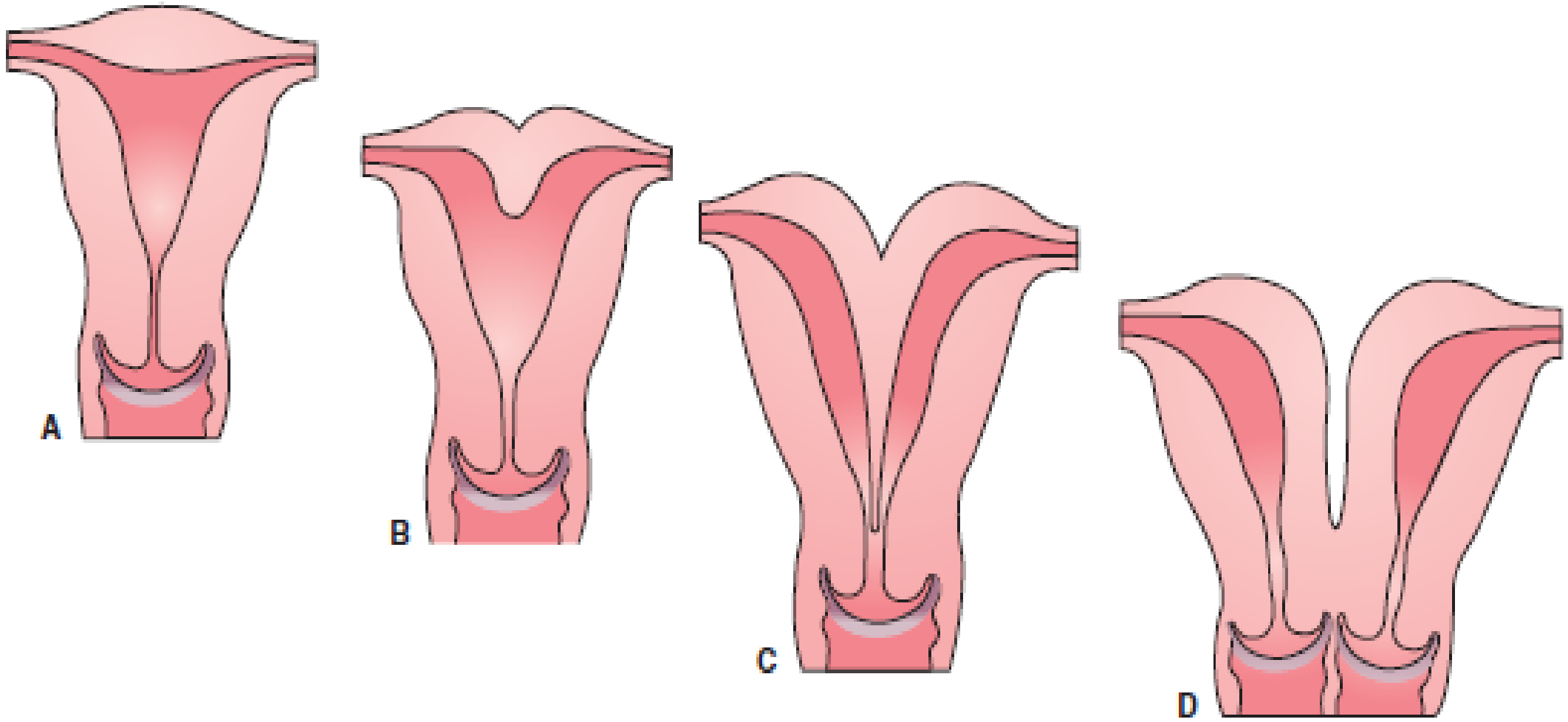
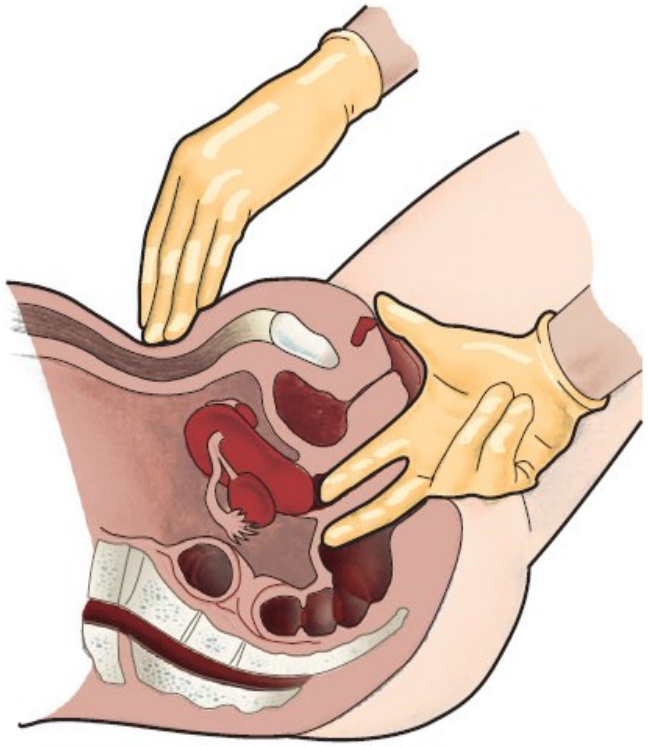


FIGURE 5.9 (**A**) Normal uterus. (**B**) Bicornuate uterus. (**C**) Septum dividing uterus. (**D**) Double uterus. Abnormal shapes of uterus allow less placenta implantation space.

- **Rectovaginal palpation**

It permits assessment of rectovaginal septum, posterior surface of the uterus, and the region behind the cervix. The vaginal finger is removed, leaving the middle finger free to rotate 360 degrees. The rectum is palpated for rectal tenderness and masses.



3. Laboratory and Diagnostic procedures

Following lab and diagnostic procedures are ordered:

- CBC
- Total blood cholesterol, FBS, UA, mammogram
- VDRL (Venereal disease research laboratory for syphilis serology)
- ECG, chest x-ray
- HIV

2. Genetics

- There is an ongoing need to identify women with increased risk of having a child with a serious genetic disorder so that they can be offered **genetic counseling** and appropriate **genetic testing**.

- Nurses are needed to actively identify and refer high-risk patients and their families to appropriate professionals and to meet the special psychosocial needs of those women who must deal with genetic disorders and congenital anomalies.

- Nurses, as primary providers of health services, are in a unique position to meet these challenges.

Genomics

- **Genomics:** Address the functions and interactions of all the genes in an organism.
- It is the study of the entire DNA structure.
- Genomic health care incorporates assessment, diagnosis, and treatment that use information about gene function.
- Genetic information includes **personal data** as well as information about **blood relatives**.
- **Genetics: is the science of heredity**
- **Genes:** are the coded sequence of information to which cellular organisms regulating their embryologic development, metabolic functioning, growth, and reproductive.

Roles for nurses in genetics are being expanded or developed, all nurses should be prepared to collaborate in interdisciplinary clinical partnerships and provide five main genetics - related nursing activities:

1. Collecting, reporting, and recording genetics information.
2. Offering genetics information and resources to patients and families
3. Participating in the informed consent process and facilitating informed decision making
4. Participating in management of patients and families affected by genetic conditions
5. Evaluating and monitoring the impact of genetics information, testing, and treatment on patients and their families.

Genetic History – Taking and Genetic Counseling Services.

- Goal of screening is to detect or define risk for disease in low-risk populations and identify those for whom diagnostic testing may be appropriate.
- A nurse can obtain a genetics history using a questionnaire or checklist.
- Genetic counseling may occur in the office, or referral to a geneticist.

Genetic Counseling

Who should be offered prenatal diagnosis?

- Maternal age 35years or more
- Previous history of chromosomal abnormalities
- Family history of metabolic or structural autosomal recessive or dominant disorder.
- Couples who have a previous personal or family history of first or second-degree relative of a neural tube defect.
- Clients who exhibit extreme anxiety or concern.

Ethical Considerations

- Most genetic testing is offered prenatally in order to identify genetic disorders in fetuses. When an affected fetus is identified, termination of the pregnancy is an option.

- Other requests for genetic testing occur for sex selection or for late – onset disorders.

- Preimplantation genetic diagnosis (PGD). In this procedure, embryos are tested before implantation by in vitro fertilization (IVF).

Potential impact of genetic diseases to family and community

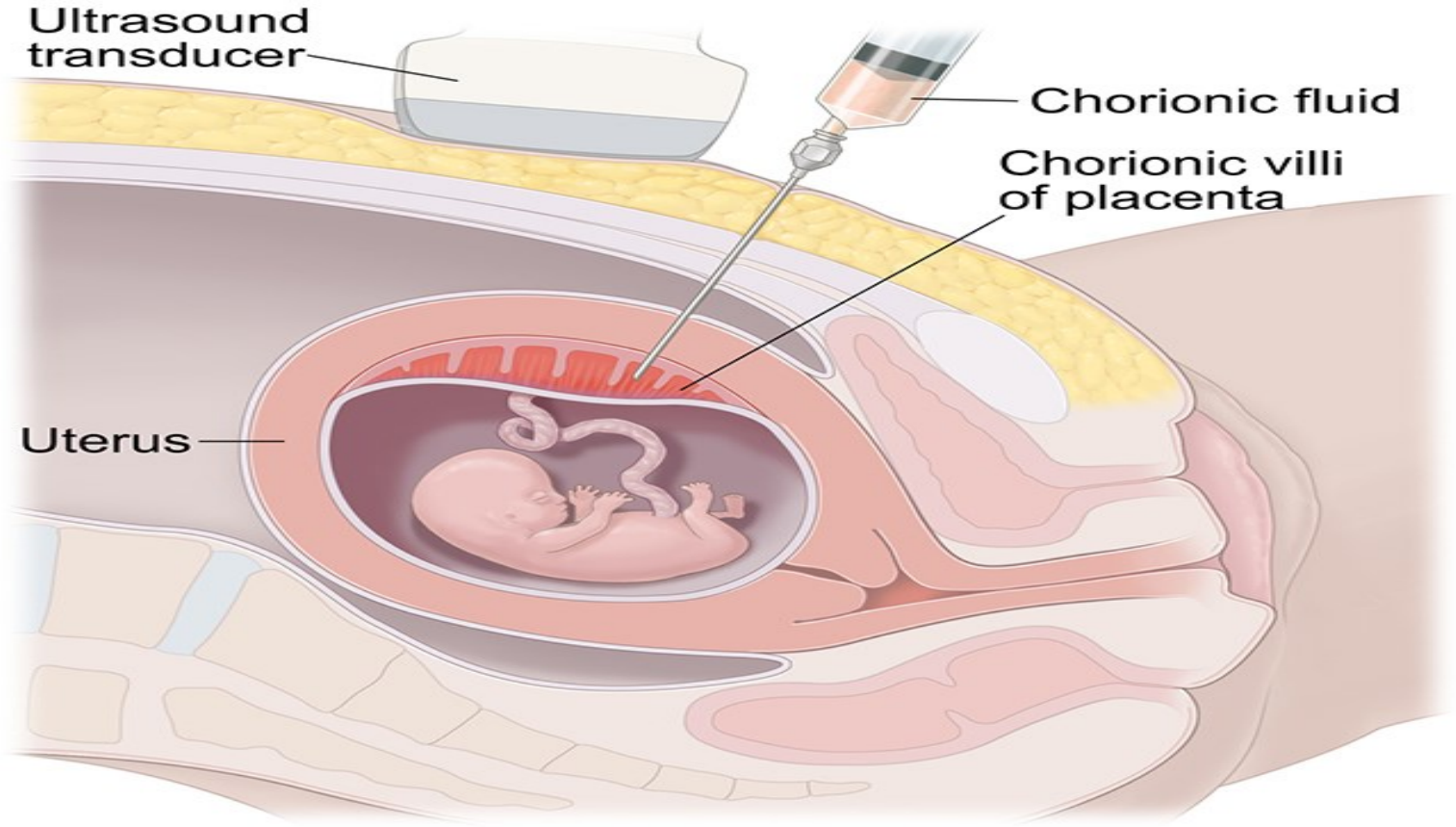
- Financial cost to family
- Loss of family integrity
- Social Isolation
- Lifestyle alteration
- Disruption of husband-wife relationship
- Threatened family self concept
- Psychological damage
- Physical health problems

Genetic Testing

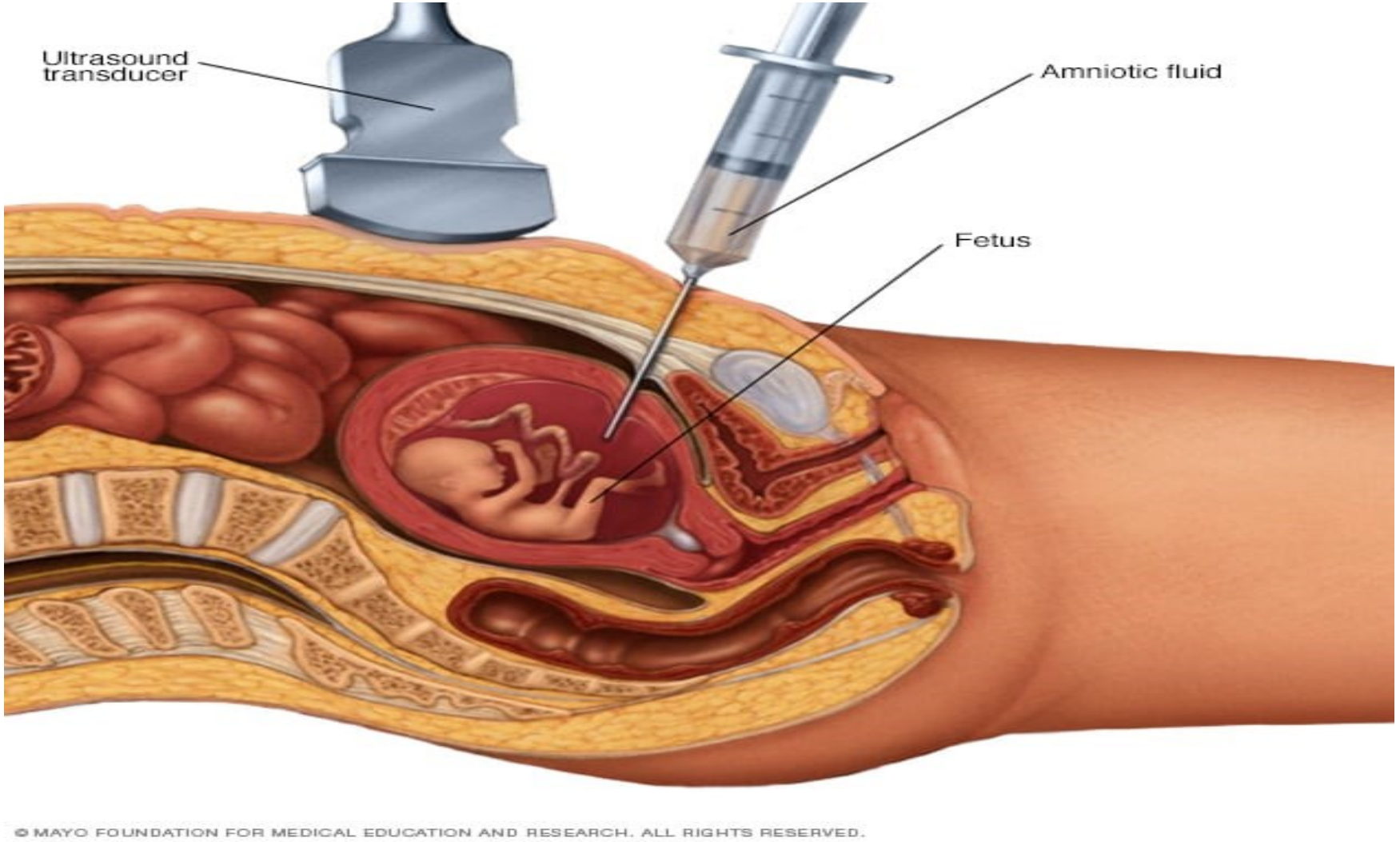
Prenatal testing: tests used to identify the genetic status of a pregnancy at risk for a genetic condition.

Current prenatal testing option include:

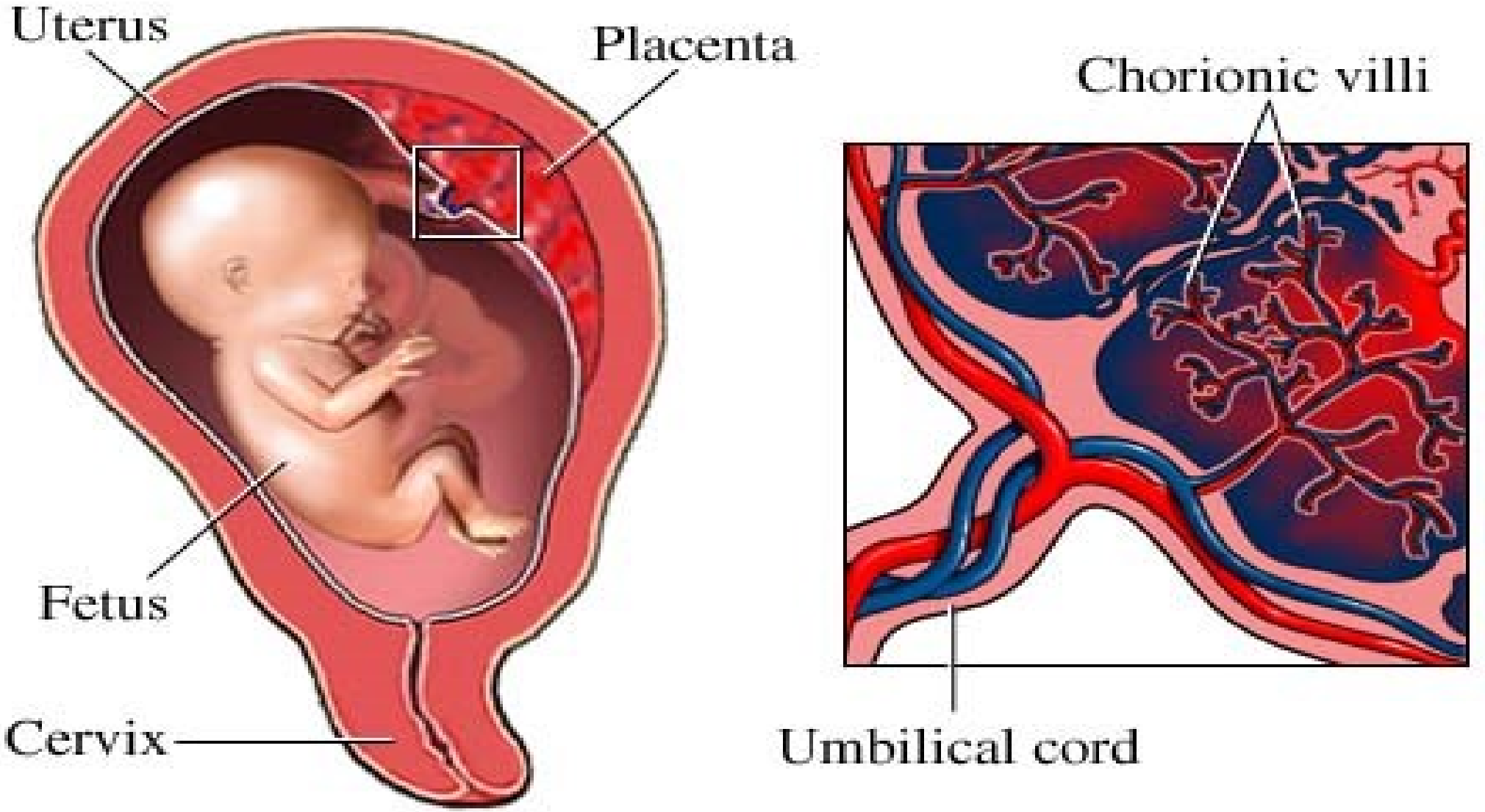
1. **Maternal serum screening** (a blood test used to see if a pregnant woman is at increased risk for carrying a fetus with NTD or a chromosomal abnormality such as down syndrome) and **invasive procedures** (amniocentesis and chorionic villus sampling (CVS).
2. Carrier screening tests (autosomal recessive form) e.g., CF, Sickle cell disease.
3. Predictive testing, which is used to clarify the genetic status of asymptomatic family members.



CVS is usually done between the 10th and 12th weeks of pregnancy



Amniocentesis usually done between weeks 15 and 20 of pregnancy.

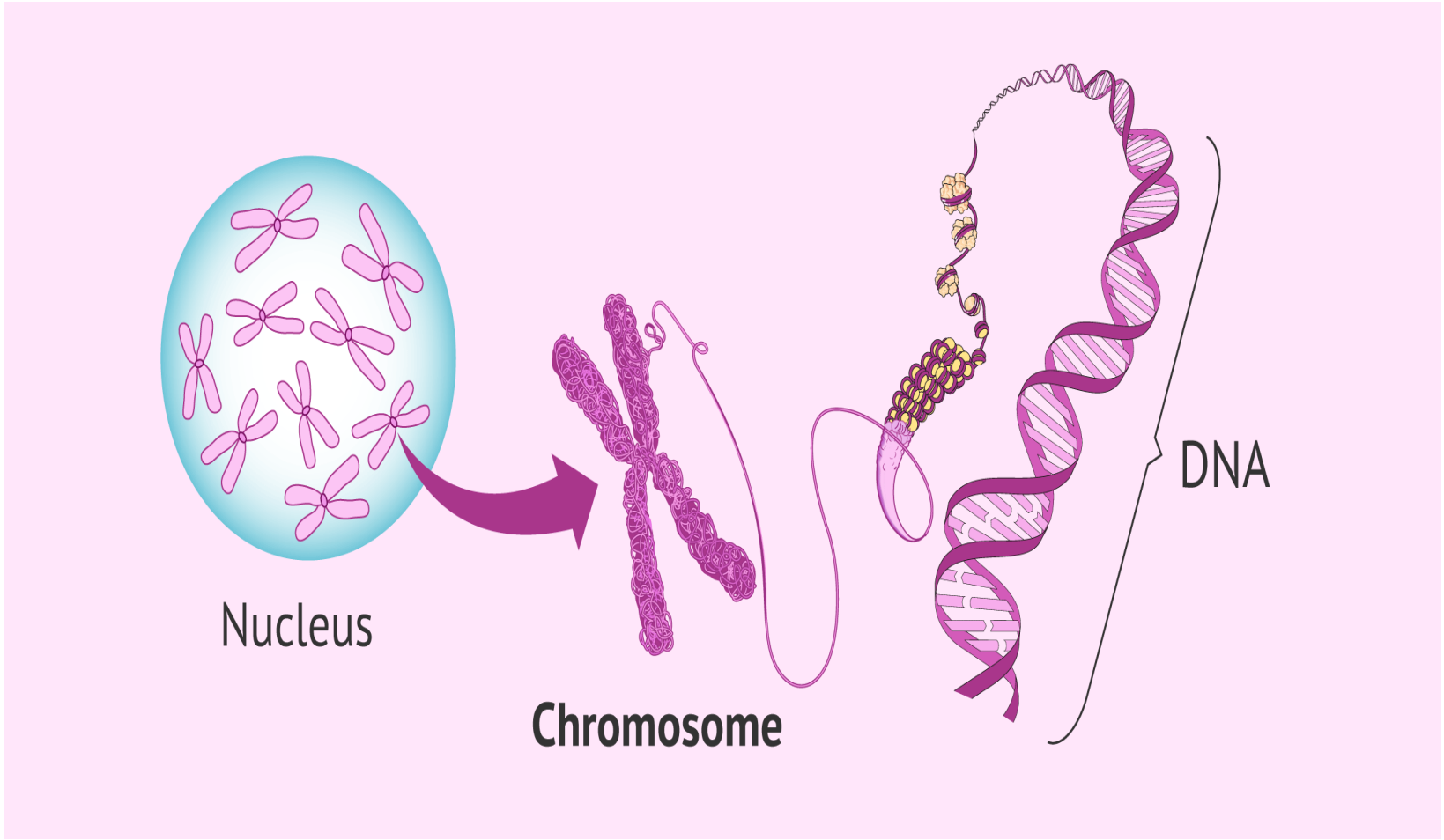

Uterus
Placenta
Fetus
Cervix
Chorionic villi
Umbilical cord

Genes and chromosomes

- The hereditary material carried in the nucleus of each body cell determines an individual's physical characteristics. This material –DNA- forms threadlike strands known as **chromosomes**.

- Each chromosome is composed of many smaller segments of **DNA** referred as **genes**.

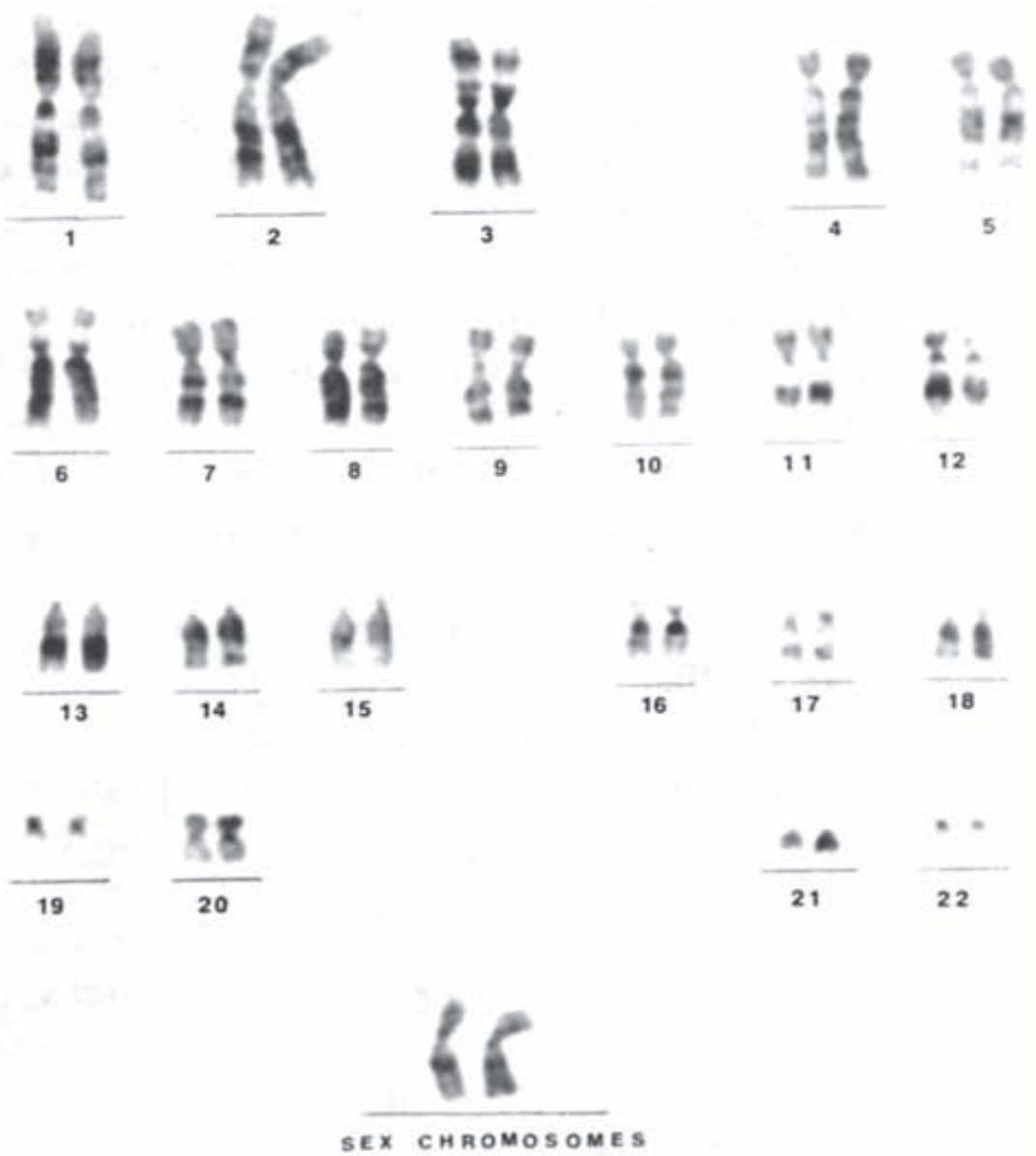
- Combinations of genes contain coded information that determines an individual's unique characteristics.


Nucleus
Chromosome
DNA

- Analysis of the number, form, and size of an individual's chromosomes is termed the **karyotype.**

- The chromosomes are numbered from the largest to the smallest, 1 to 22, and the sex chromosomes are designated by the letter X or Y. A female karyotype is designated as 46,XX and a male karyotype is designated as 46,XY.

- The large female chromosome is called the X, the tiny male chromosome is the Y. When one X chromosome and one Y chromosome are present the embryo develops as **male**. When two X chromosomes are present, the embryo develops as a **female**.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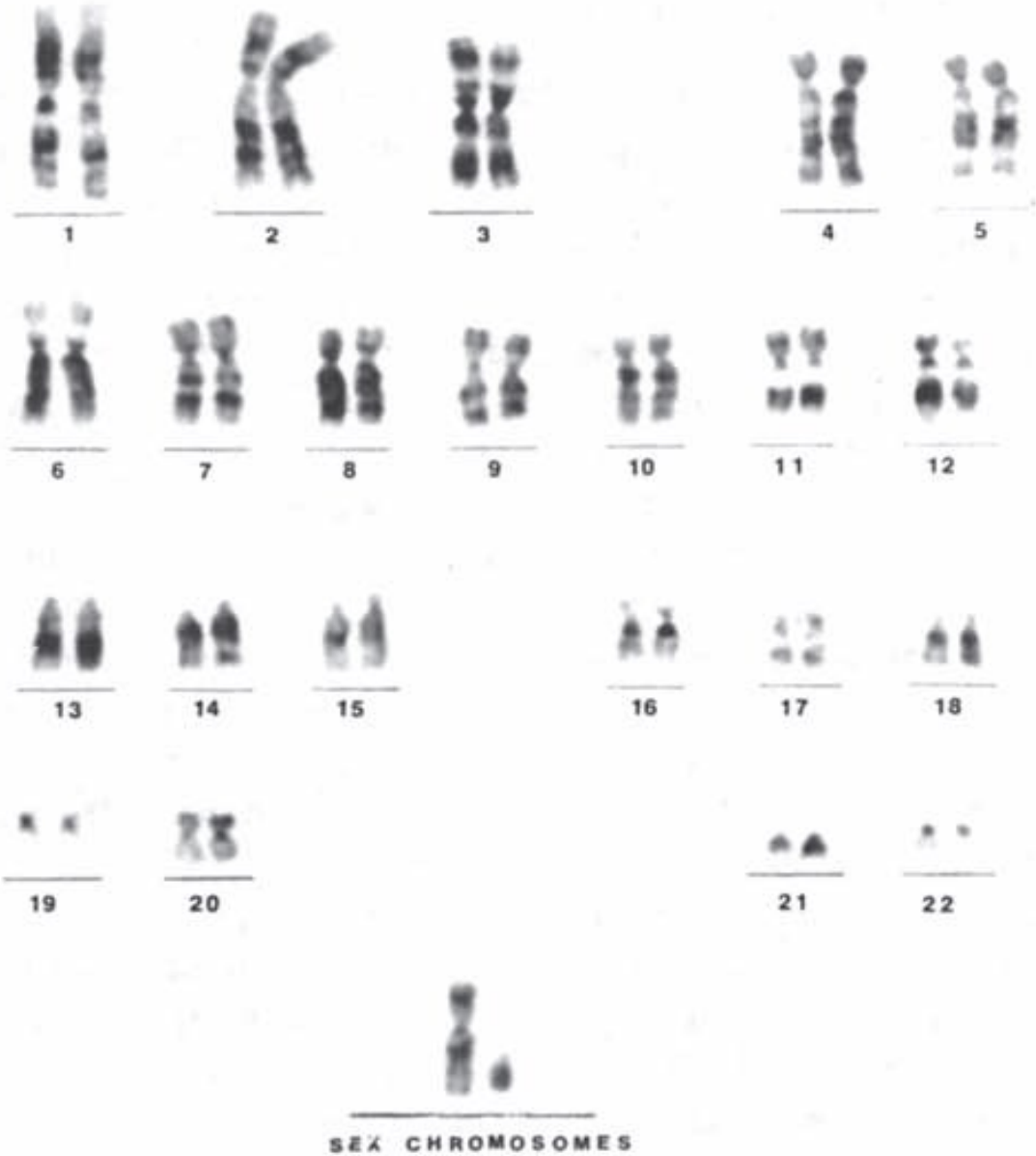
SEX CHROMOSOMES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SEX CHROMOSOMES

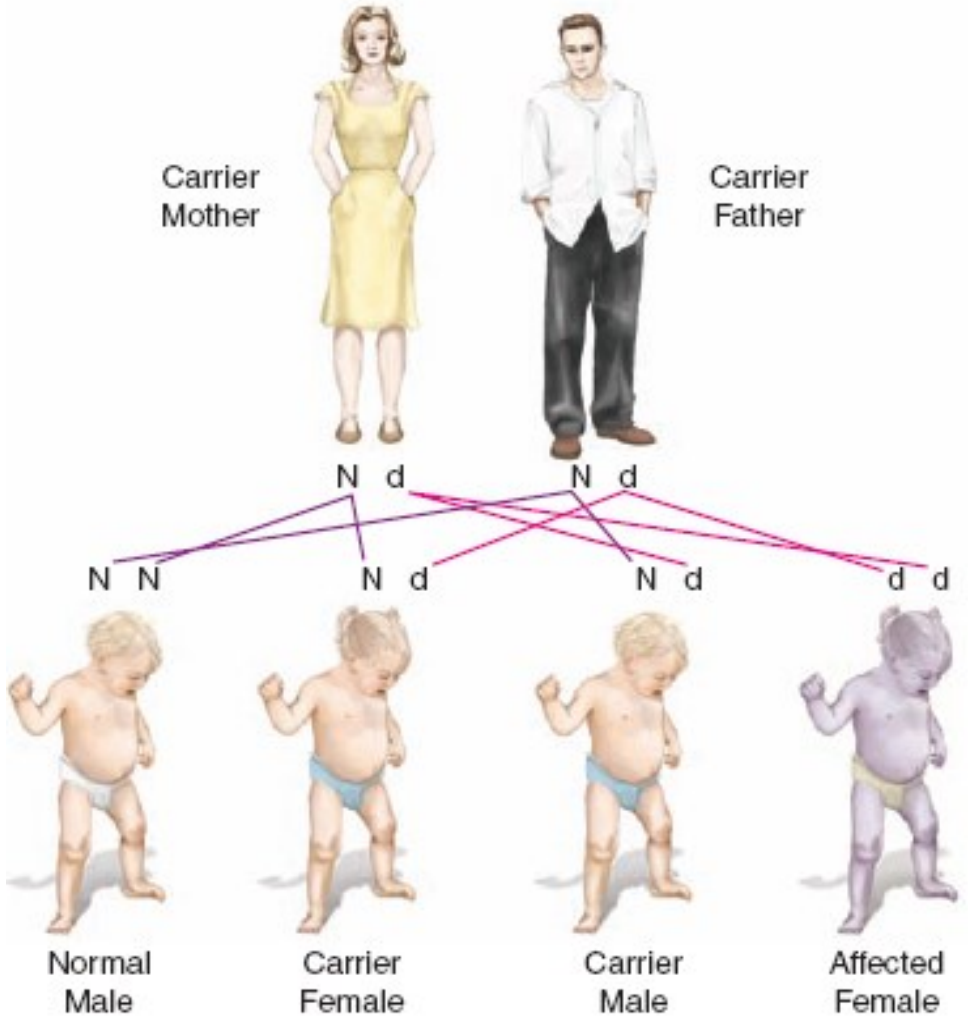
- Any change in gene structure or location leads to a **mutation, which may alter the type** and amount of protein produced.

- Genes never act in isolation; they always interact with other **genes and the environment.**

Chromosomal Abnormalities

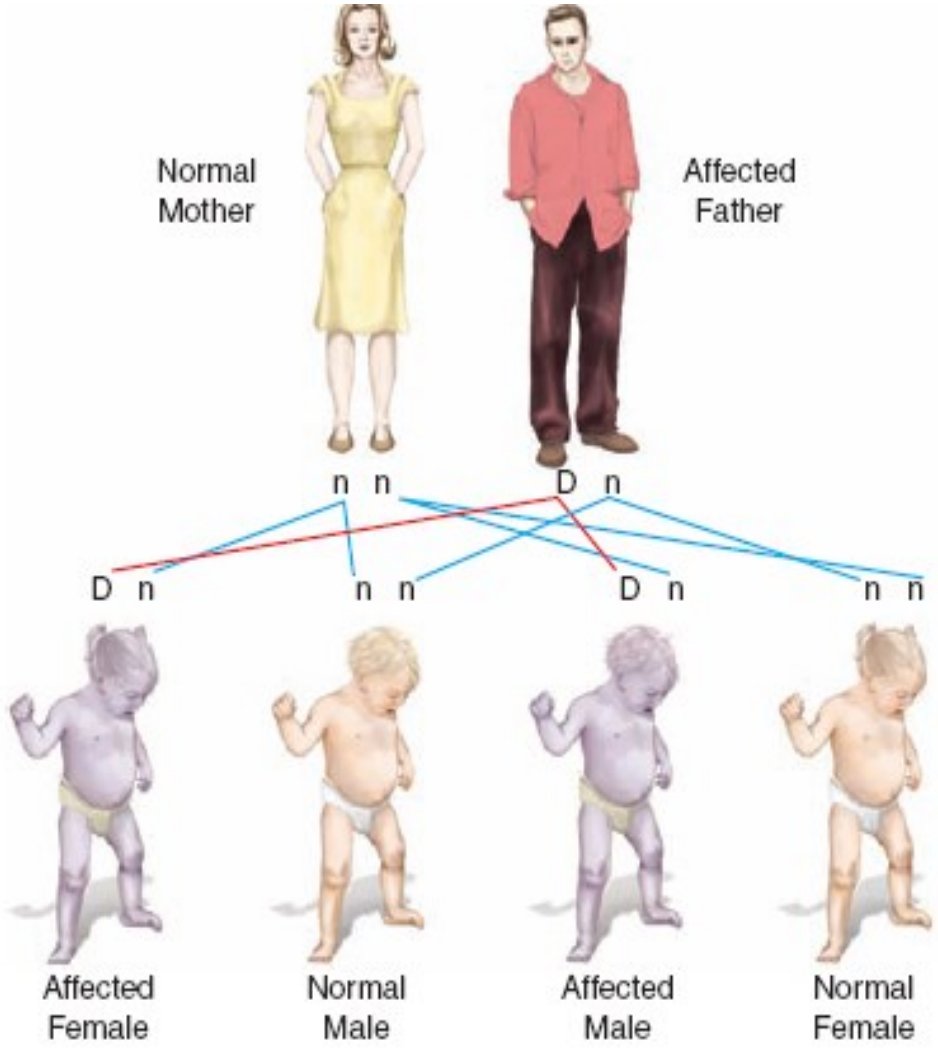
- Chromosomal abnormalities occur in 0.5% to 0.6% of newborn infants.
- The incidence of chromosomal abnormalities in fetuses spontaneously miscarried is as high as 61.5%.
- Chromosomal abnormalities account for approx. 10% of neonatal deaths.
- If the defect occurs on the autosome, the genetic disorder is termed **autosomal**; if the defect is on the **X chromosome**, the genetic disorder is termed X-linked. The defect also can be classified as dominant or recessive.

Common types of genetic disorders that follow the **autosomal recessive inheritance** pattern include cystic fibrosis (CF), phenylketonuria (PKU), and sickle-cell disease.



Autosomal recessive inheritance.

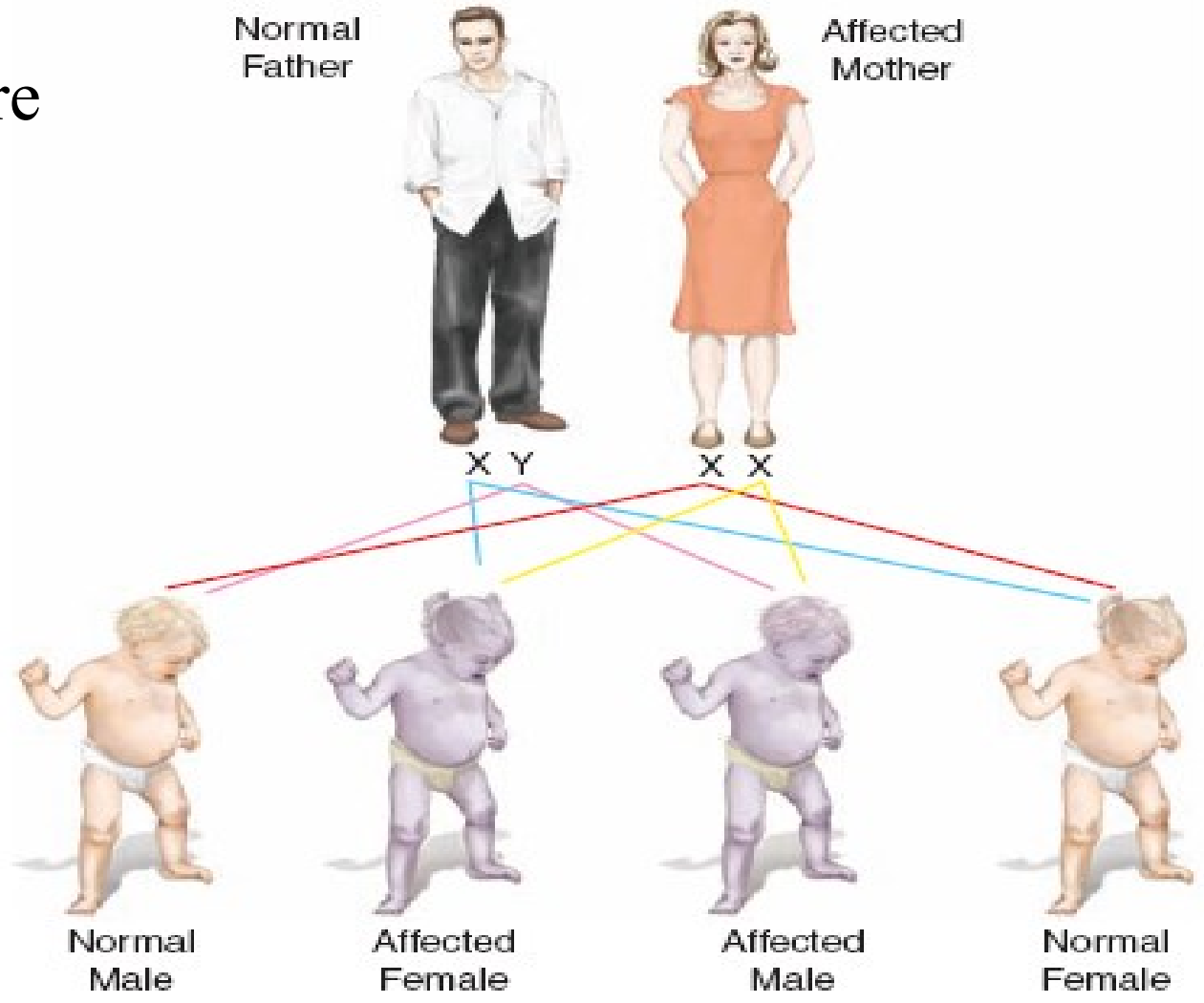
Common types of genetic disorders that follow the **autosomal dominant pattern** of inheritance include neurofibromatosis, polycystic kidney disease.



Autosomal dominant inheritance.

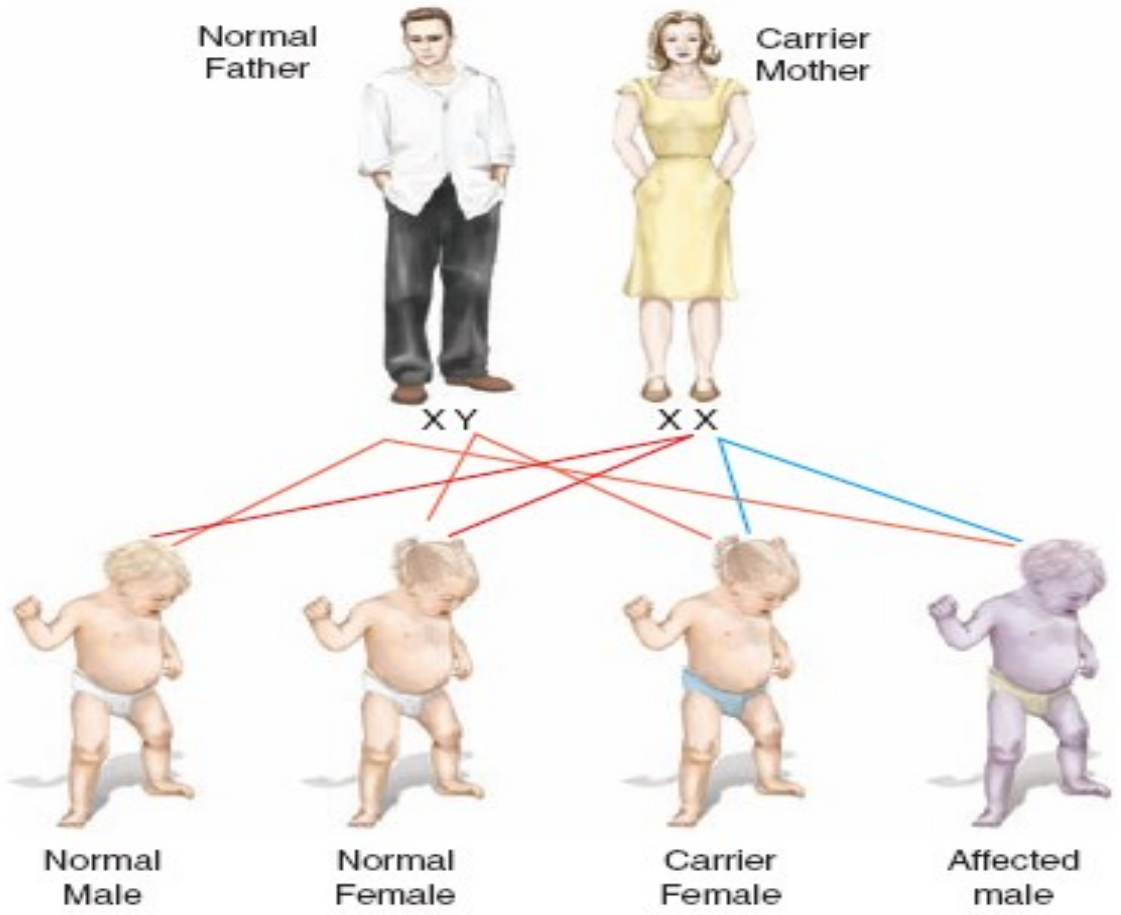
X-linked dominant disorders are rare.

The most common is hypophosphatemic (vitamin D–resistant) rickets.



X-linked dominant inheritance.

Common types of genetic disorders that follow **X-linked recessive inheritance** patterns include hemophilia, color blindness.



X-linked recessive inheritance.

Causes of chromosomal abnormalities

- Radiation
- Drugs
- Viruses
- Toxins
- Chemicals
- Women whose age is 35 years, or more are at risk to get Down syndrome. ***This group of women must be referred to genetic counseling.***

- Not all congenital disorders are inherited. Congenital means that the condition was present at birth. Some congenital malformations may be the result of **teratogens (**environmental substances or exposures that result in functional or structural disability).
- Disability caused by teratogens are, in theory, totally preventable .
- Known human teratogens are drugs and chemicals, infections, exposure to radiation, and certain maternal conditions such as diabetes and PKU.
- A teratogen has the greatest effect on the organs and parts of an embryo during its periods of rapid differentiation **(embryonic period from days 15 to 60).**

- Malnutrition during pregnancy produce low birth weight newborns who are susceptible to infection, also affects **brain development** during the latter half of gestation and may result in learning disabilities in the child. **Inadequate folic acid** is associated with neural tube defect.

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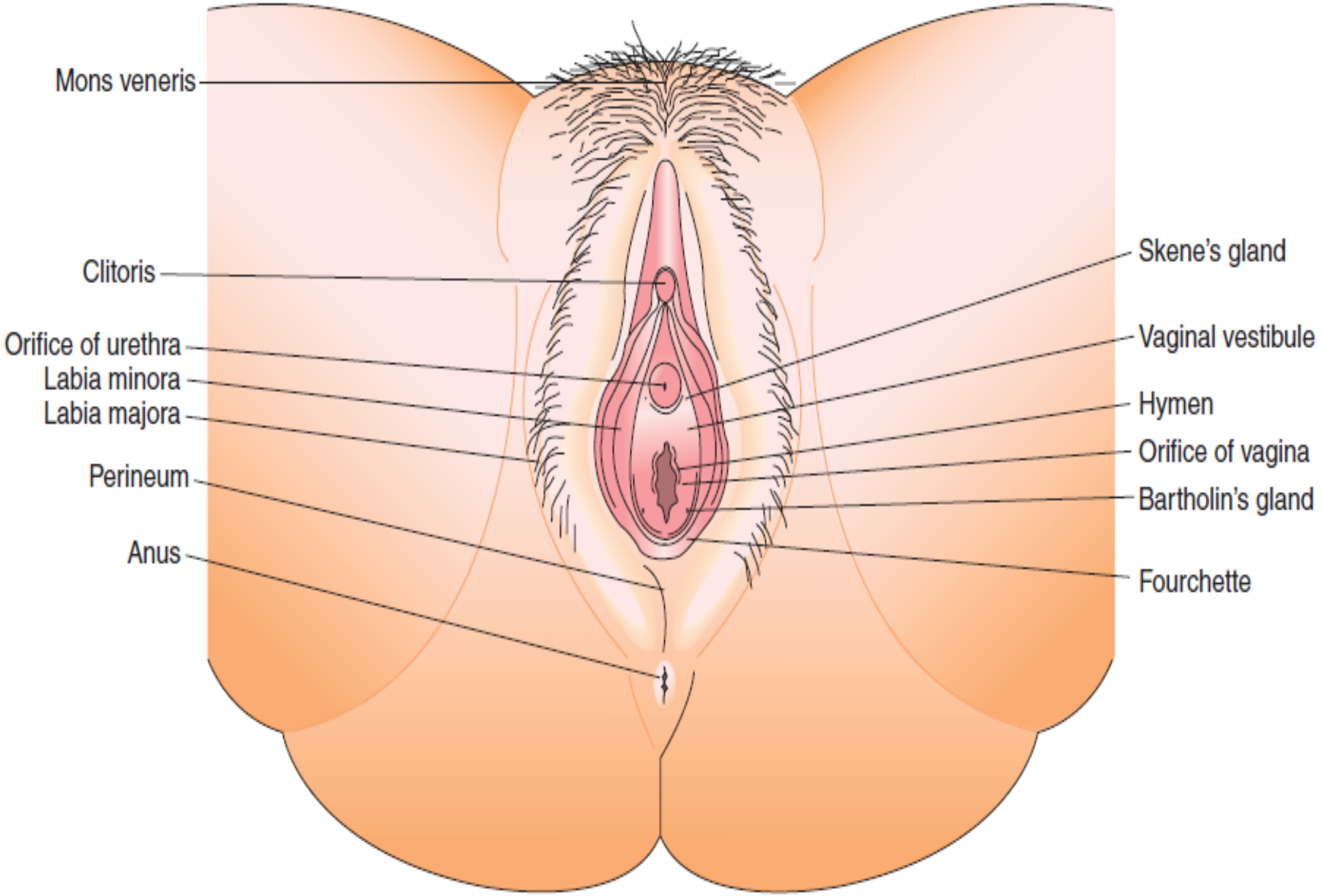
3. Female Reproductive System

The female reproductive system, has both external and internal components.

1. Female External Structures

The structures that form the female external genitalia are termed the vulva (from the Latin word for “covering”).


Mons veneris
Clitoris
Orifice of urethra
Labia minora
Labia majora
Perineum
Anus
Skene's gland
Vaginal vestibule
Hymen
Orifice of vagina
Bartholin's gland
Fourchette

- **Mons pubis**: is a fatty pad that lies over the anterior surface of the symphysis pubis.

- **Labia majora**: are two rounded folds of fatty tissue covered with skin that extend downward and

  backward from the mons pubis.

- **Labia minora**: are two flat, reddish folds of tissue visible when the labia majora are separated. Anteriorly, the labia minora fuse to form the **prepuce (hoodlike covering of the clitoris) .** Labia minora join to form a thin flat tissue called **fourchette** underneath the vaginal opening at midline.

- **Clitoris:** is located underneath the prepuce, small structure composed of erectile tissue with numerous sensory nerve ending (plays an important part in sexual excitement in females).

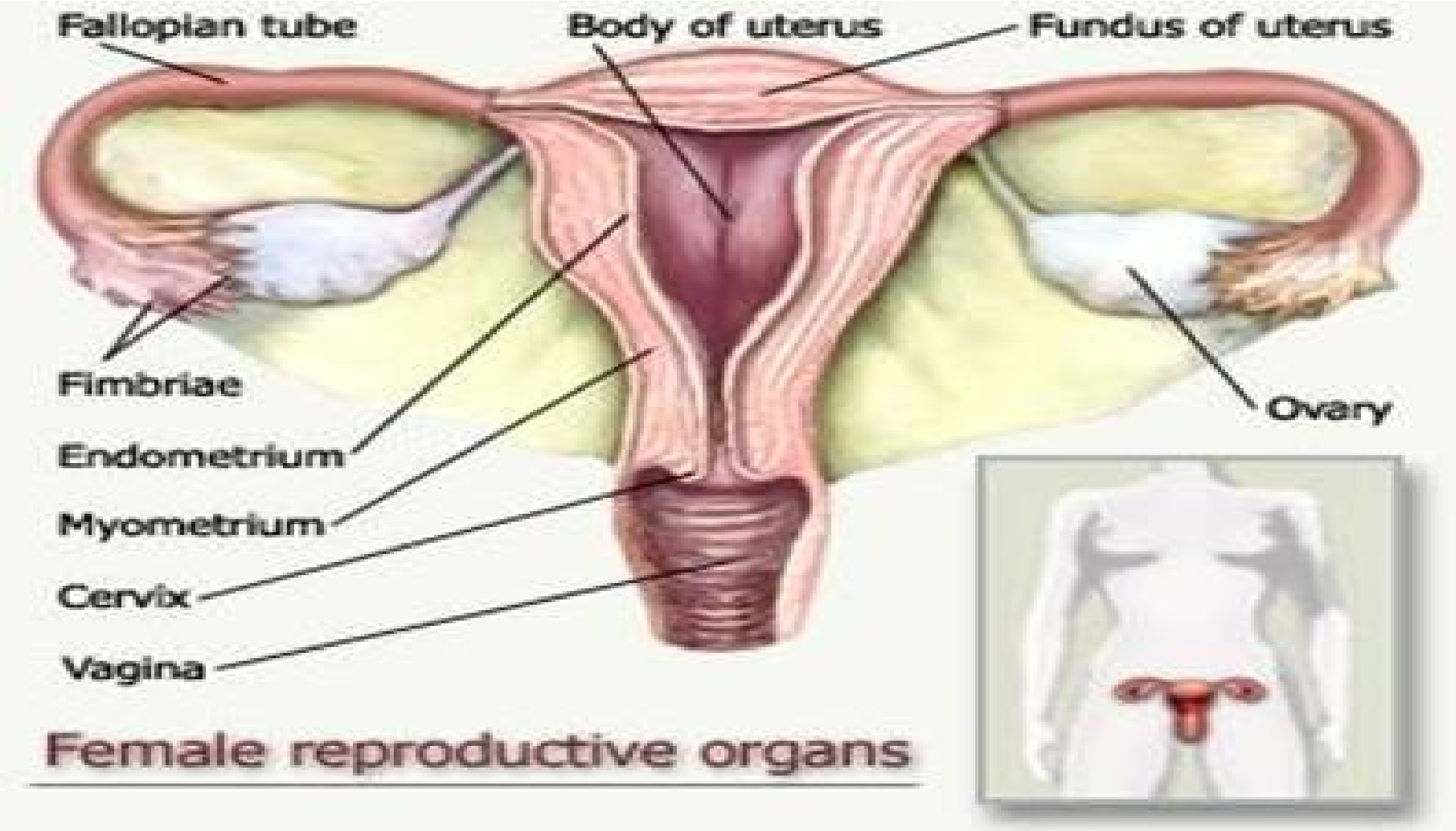
- **Vaginal vestibule**: almond shaped area is the flattened, smooth surface enclosed by the labia minora that contains openings to the urethra, Skene glands, vagina, and Bartholin glands.
- **Urethra**: is not a reproductive organ but is considered here due to its location. (approx. 2.5cm below clitoris).
- **Two Skene glands (paraurethral glands)** : located on each side of the urethra and produce mucus, which aids in lubrication of the vagina.
- **Vaginal opening**: in the lower portion of the vestibule and varies in shape and size.
- **Hymen**: connective tissue membrane, surrounds the vaginal opening.

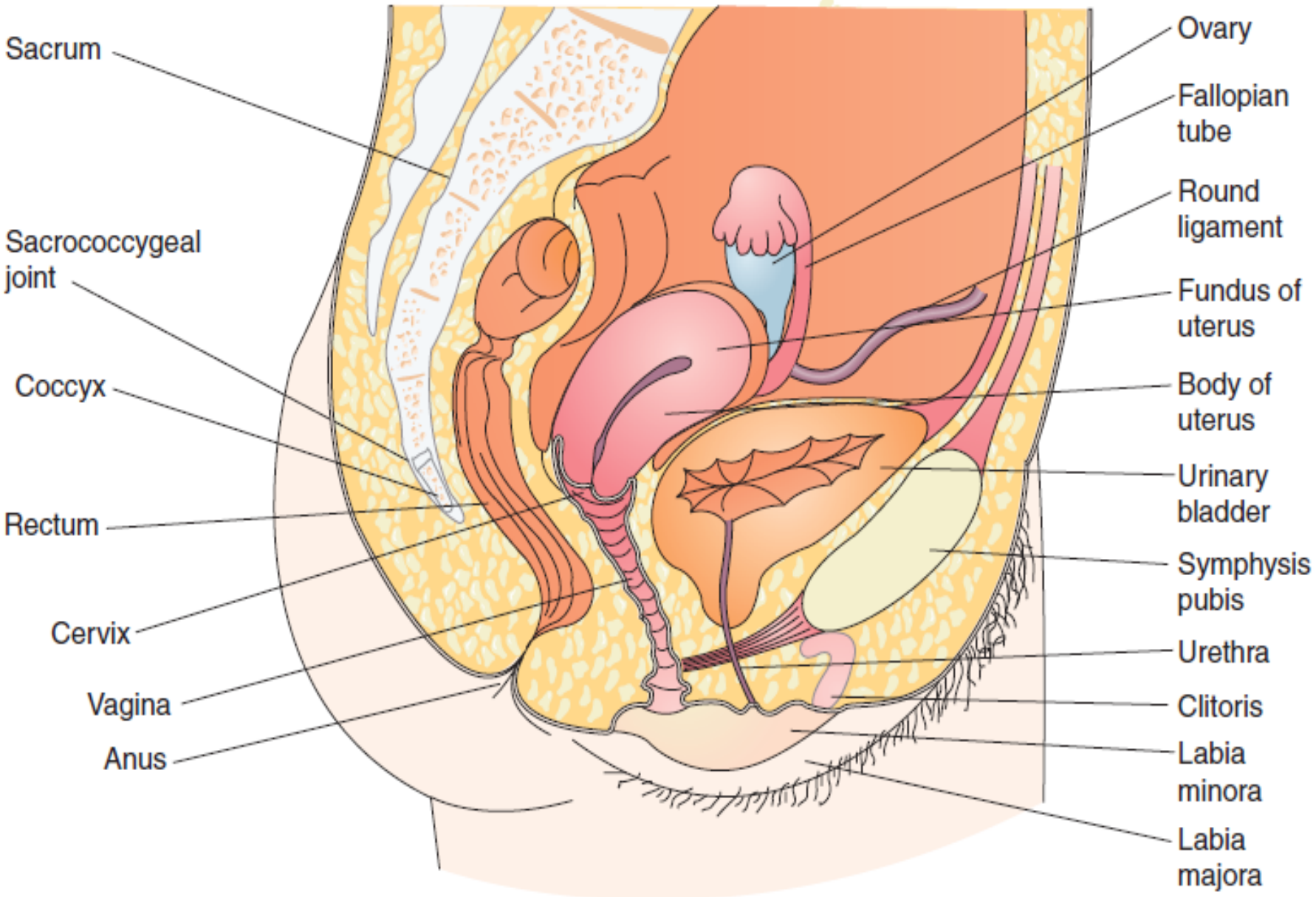
- **Bartholin glands (vulvovaginal glands)** : located posteriorly on the sides of the vaginal opening. During sexual arousal, the glands secrete a clear mucus to lubricate the vaginal introitus.

- **Perineum**: area between fourchette and the anus, which is a skin- covered muscular area that covers the pelvic structures.

2. Female Internal Structures

Female internal reproductive organs are the ovaries, the fallopian tubes, the uterus, and the vagina.


Fallopian tube
Body of uterus
Fundus of uterus
Fimbriae
Endometrium
Myometrium
Cervix
Vagina
Ovary
Female reproductive organs


Sacrum
Sacrococcygeal joint
Coccyx
Rectum
Cervix
Vagina
Anus
Ovary
Fallopian tube
Round ligament
Fundus of uterus
Body of uterus
Urinary bladder
Symphysis pubis
Urethra
Clitoris
Labia minora
Labia majora

- **Vagina**: fibromuscular, collapsible tubular structure from the vulva to the uterus and lies between the bladder and rectum. During the productive years, the mucosal lining is arranged in transverse folds called **rugae**. This rugae allow the vagina to expand during childbirth.

- Estrogen deprivation that occurs after childbirth, during lactation, and menopause causes dryness and thinness of the vaginal walls and smoothing of the rugae.

Vaginal secretions are slightly acidic **(pH 4 to 5).**

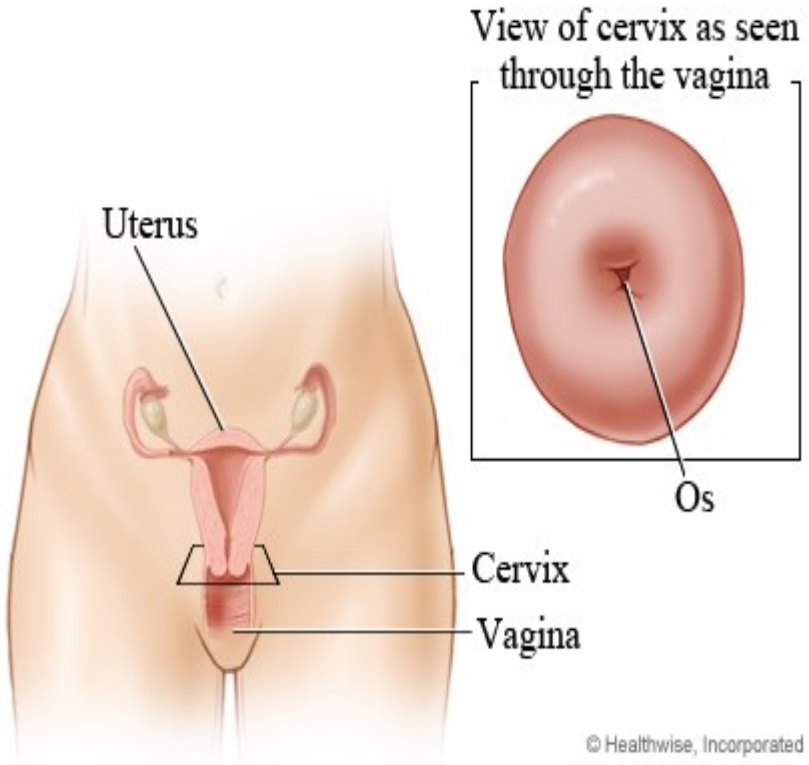
Function of vagina:

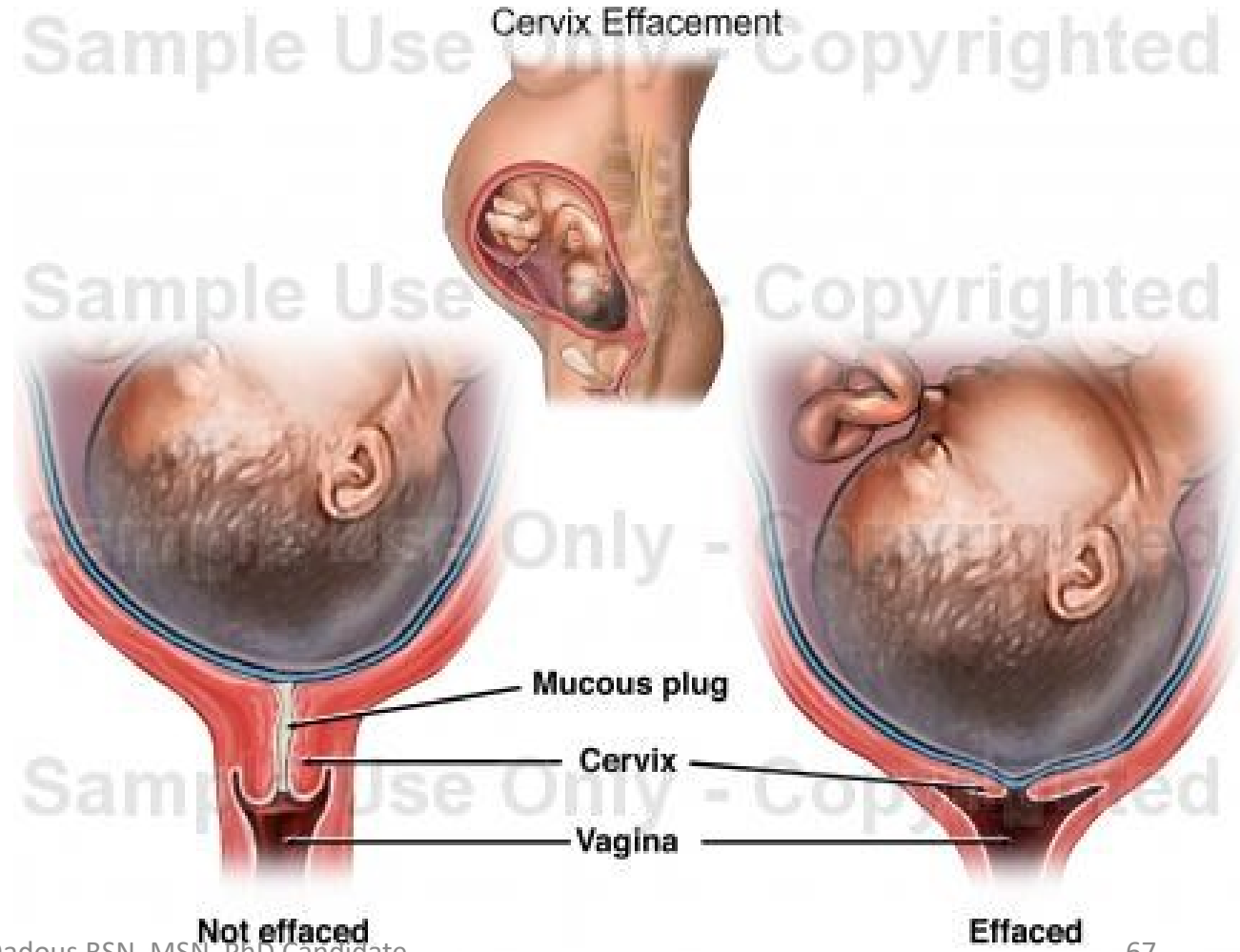
1- Passageway of the menstrual flow.

2- Female organ of copulation.

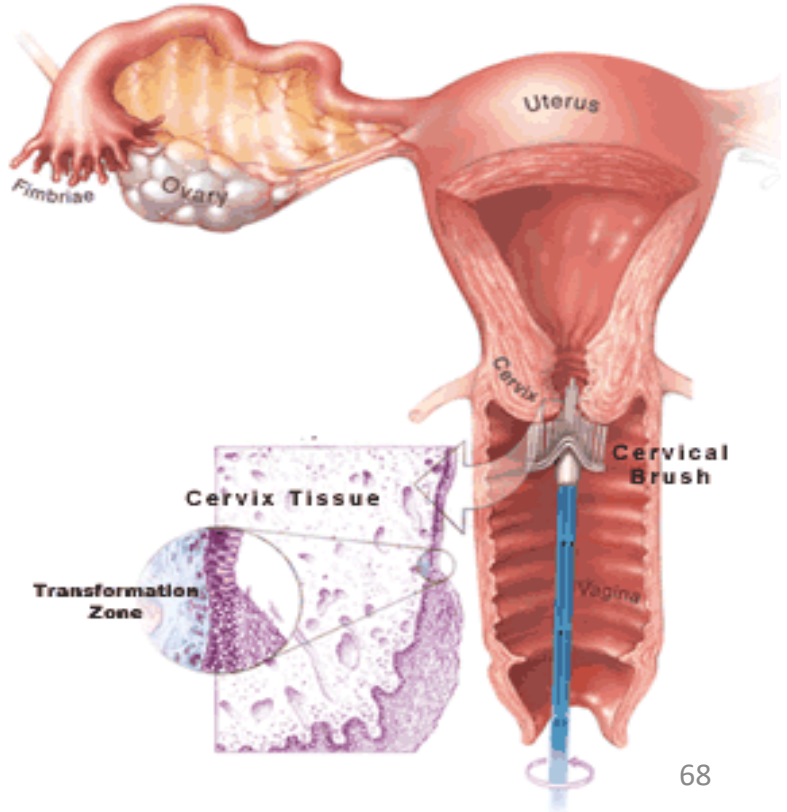
3- Birth canal for vaginal childbirth.

- **Cervix**: projects into a blind vault at the upper end of the vagina.
- **Cervix**: made up of fibrous connective tissues and elastic tissue ….. For possible to stretch during vaginal childbirth.

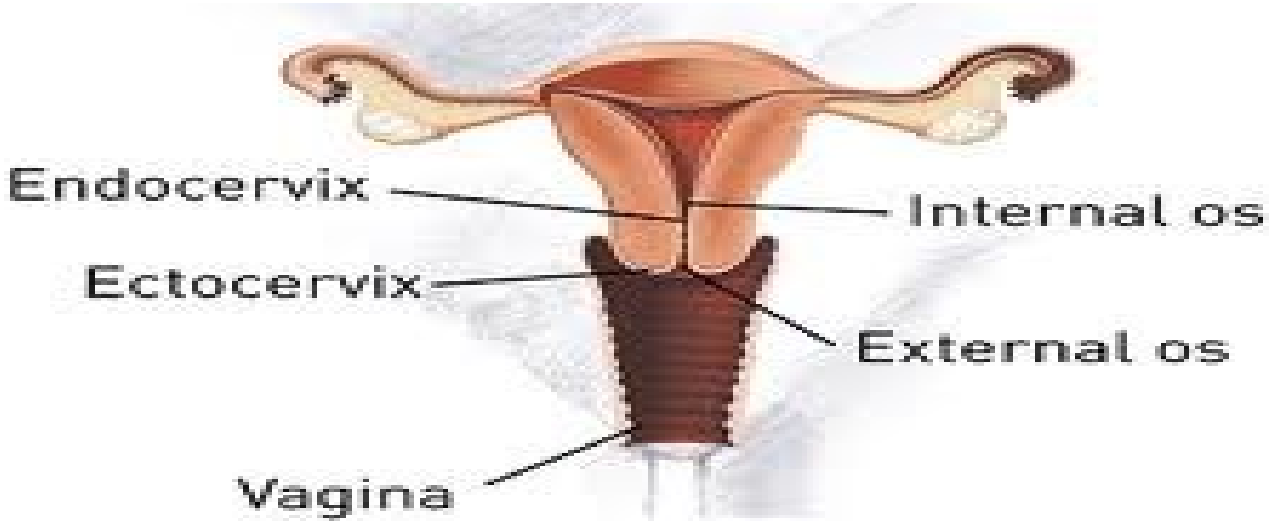




- **Outer cervix**: covered with a layer of **squamous epithelium**. Mucosa of cervical canal is covered with **columnar epithelium**, contains numerous glands that secrete mucus in response to ovarian hormones.
- 2 types of cells meet inside the cervical os this called **squamocolumnar junction**. And is the most common site for neoplastic changes; cells from this site are scraped for the **Pap test**.



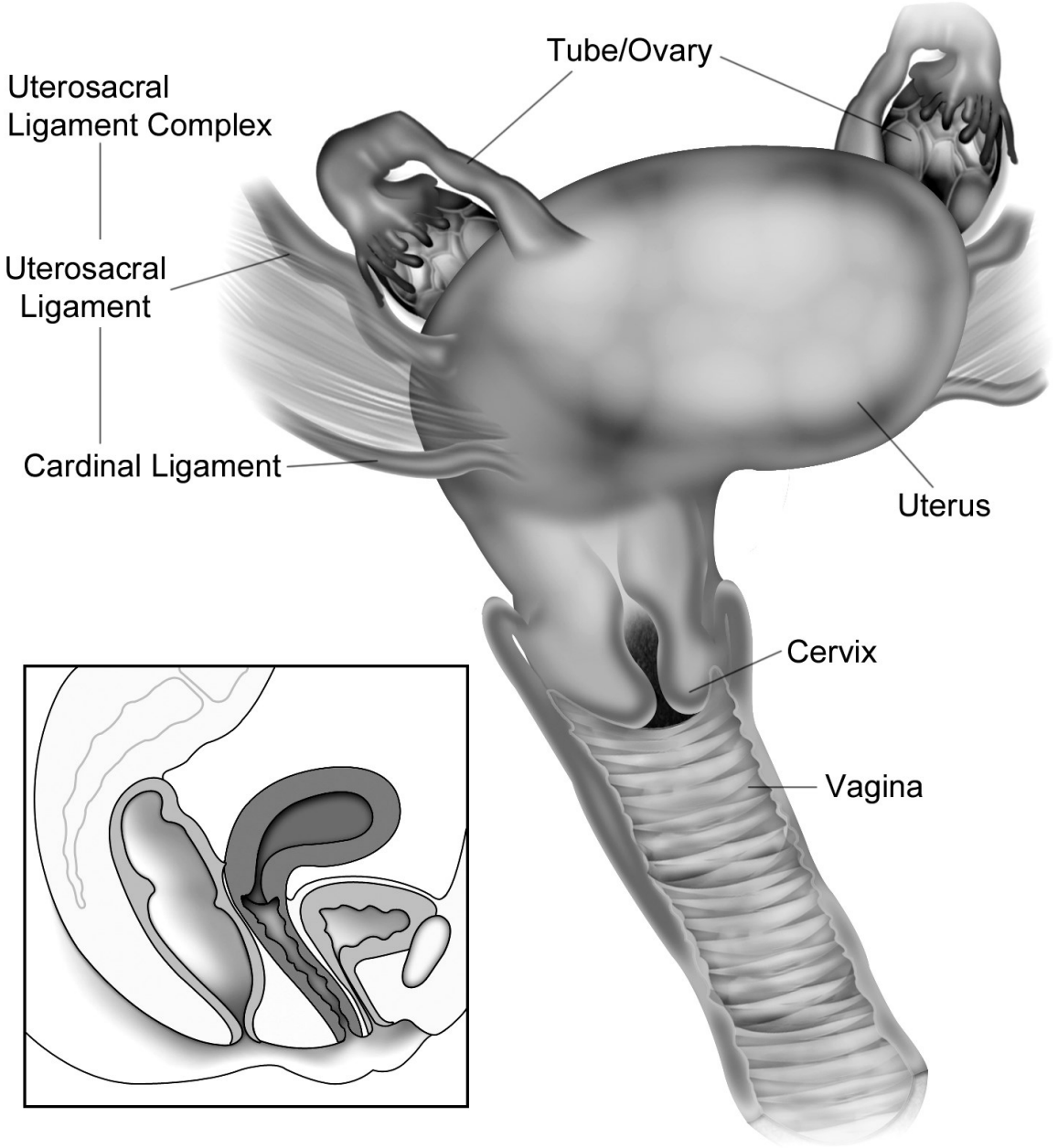
- Opening between the uterine cavity and the canal that connects the uterine cavity to the vagina (endocervical canal) is the **internal os**.
- Narrowed opening between the endocervix and the vagina is the **external os**.
- Cx. Feels firm (like the end of a nose) with a dimple in the center.



The cervix

- **Uterus**: muscular organ shaped like upside down pear that sits midline in the pelvic cavity between the bladder and rectum above the vagina.

- Four pairs of ligaments support the uterus: the cardinal, uterosacral, round, and broad. Single anterior and posterior ligaments also support the uterus.



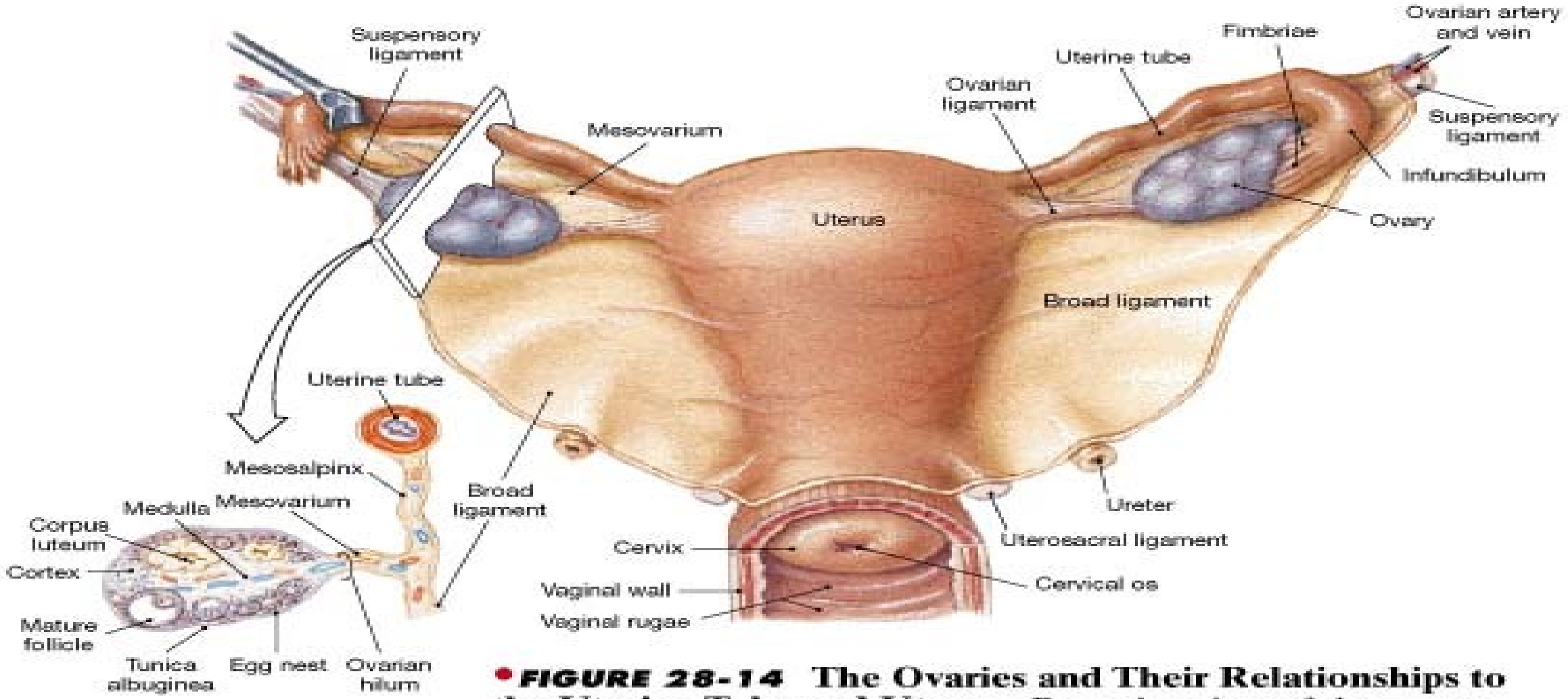


FIGURE 28-14 The Ovaries and Their Relationships to the Uterine Tube and Uterus. Posterior view of the uterus, uterine tubes, and ovaries and sectional view of the ovary, uterine tube, and associated mesenteries.

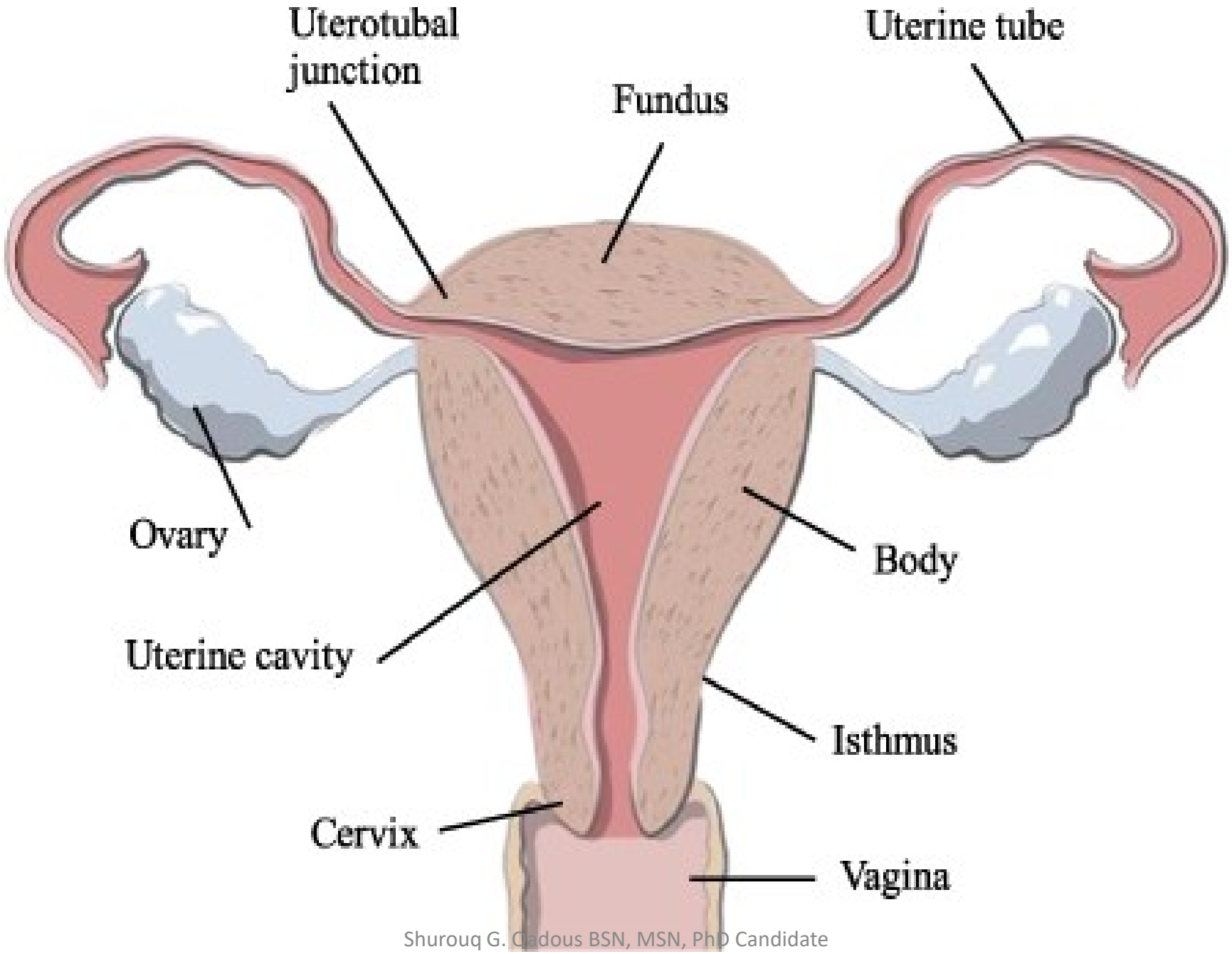
- Uterus divided into two major parts: upper triangular portion called the **corpus** and a lower cylindric portion called the **cervix**.

✓**Fundus:** dome shaped top of the uterus and is the site where the uterine tubes enter the uterus.

✓**Isthmus** (lower uterine segment) is a short-constricted portion that separates the corpus from the cervix.

Functions of uterus:

1. Reception, implantation, retention, and nutrition of the fertilized ovum and later the fetus during pregnancy.
2. Expulsion of the fetus during childbirth
3. Cyclic menstruation

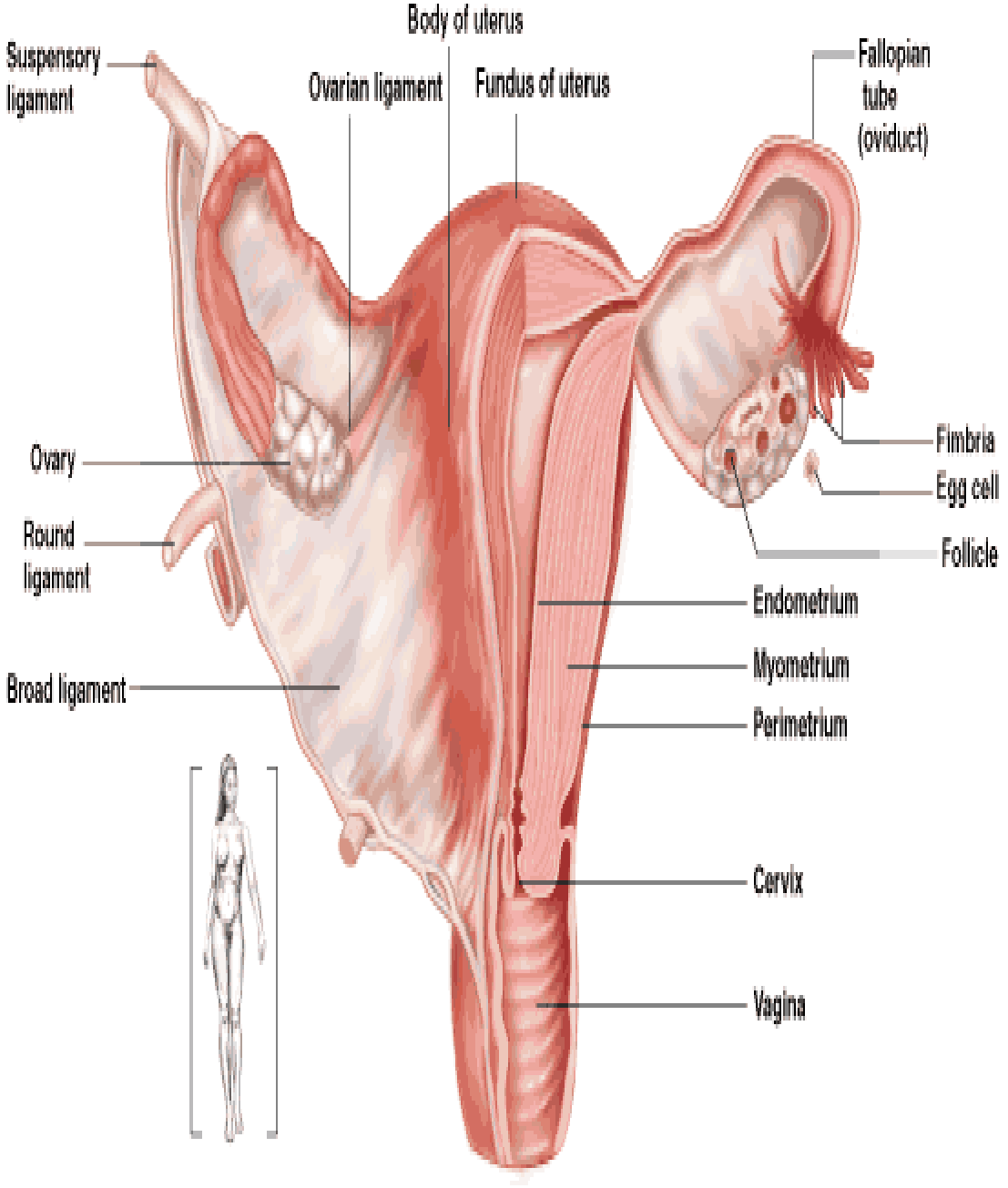

Uterotubal junction
Fundus
Uterine tube
Ovary
Uterine cavity
Body
Isthmus
Cervix
Vagina

Uterine wall consists of three layers:

- Inner one of mucous membrane (the endometrium), a middle one of muscle fibers (the myometrium), and an outer one of connective tissue (the perimetrium).

1. Endometrium

- Highly vascular lining made up of 3 layers, the outer 2 layer shed during menstruation.

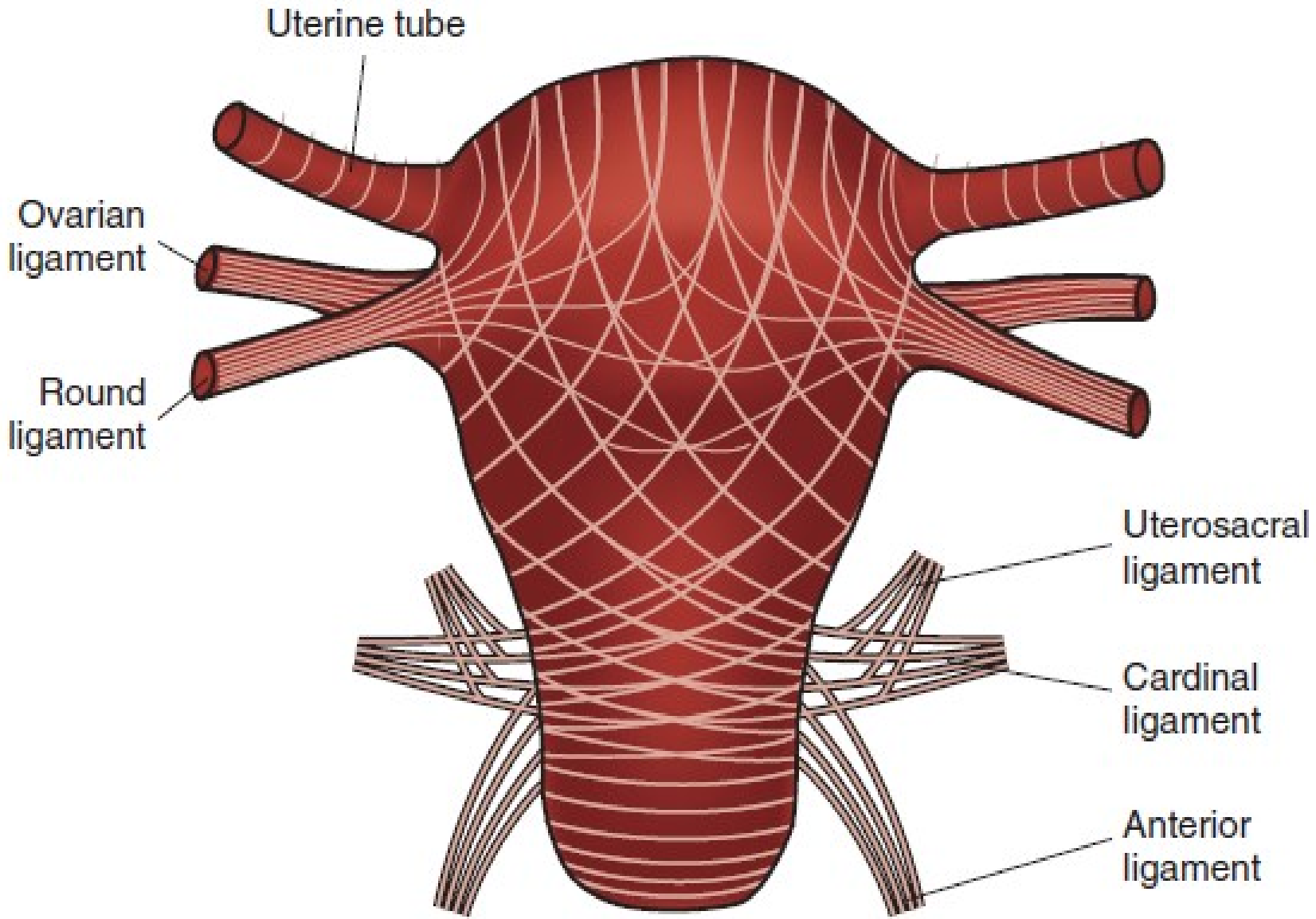


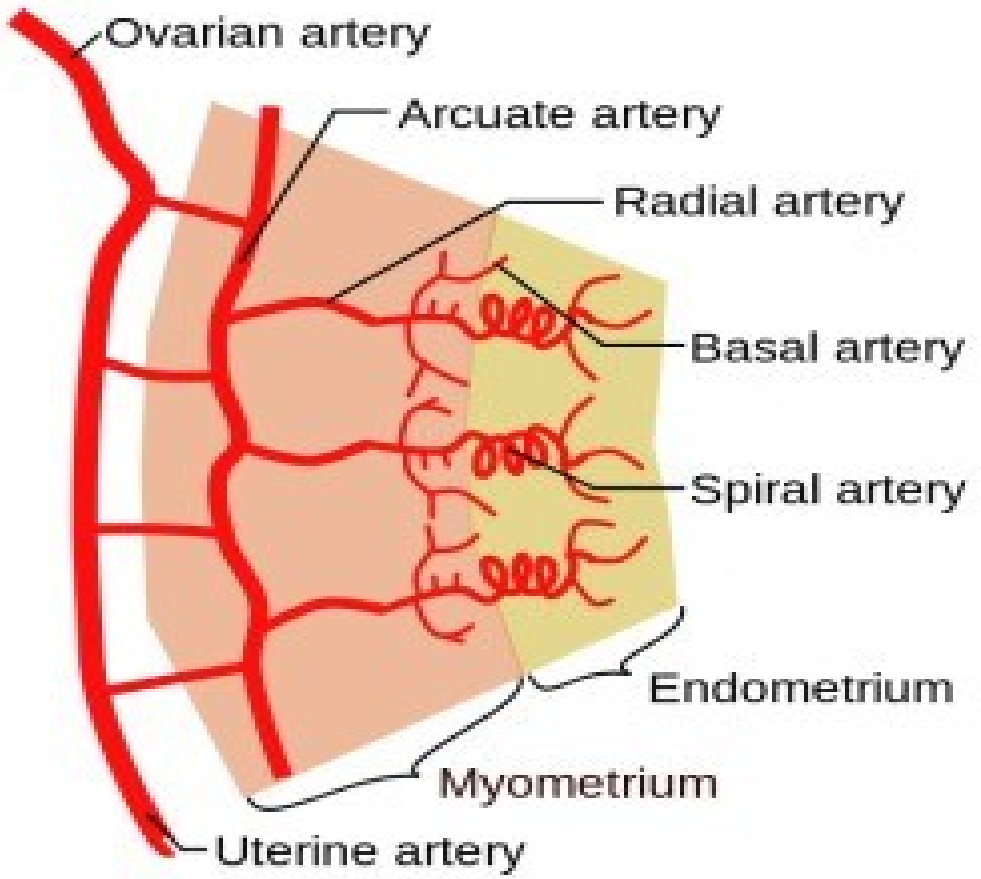
2. Myometrium

- Made up of layers of smooth muscles that extend in 3 different directions (longitudinal, transverse, and oblique).

✓**Longitudinal fibers** of the outer myometrial layer are found mostly in the funds .This arrangement assists in expelling the fetus during the birth process.

✓**Middle layer** contains fibers from all three directions, which form a figure – eight encircling large blood vessels …. This arrangement assists in constricting blood vessels after childbirth and control blood loss.


Uterine tube
Ovarian ligament
Round ligament
Uterosacral ligament
Cardinal ligament
Anterior ligament


Ovarian artery
Arcuate artery
Radial artery
Basal artery
Spiral artery
Endometrium
Myometrium
Uterine artery

✓Most of the **circular fibers** of the inner myometrial layer are around the site where the uterine tubes enter the uterus and around the internal cervical os (opening).

- The fibers help keep the cervix closed during pregnancy and prevent menstrual blood from flowing back into the uterine tubes during menstruation.

- **Uterine tubes (fallopian tubes):** attach to the uterine fundus. The tubes are supported by the broad ligaments, range from 8 to 14 cm in length. Uterine tubes provide a passage for ova from ovaries to uterus.

- **Ovaries**: almond shape organs located on each side of the uterus below and behind the uterine tubes. They are grayish white. During the reproductive years they are approx. **3 cm long, 2 cm wide, and 1cm thick.**

Functions of ovaries:

1. Ovulation
2. Production of estrogen, progesterone, and androgen

Bony Pelvis

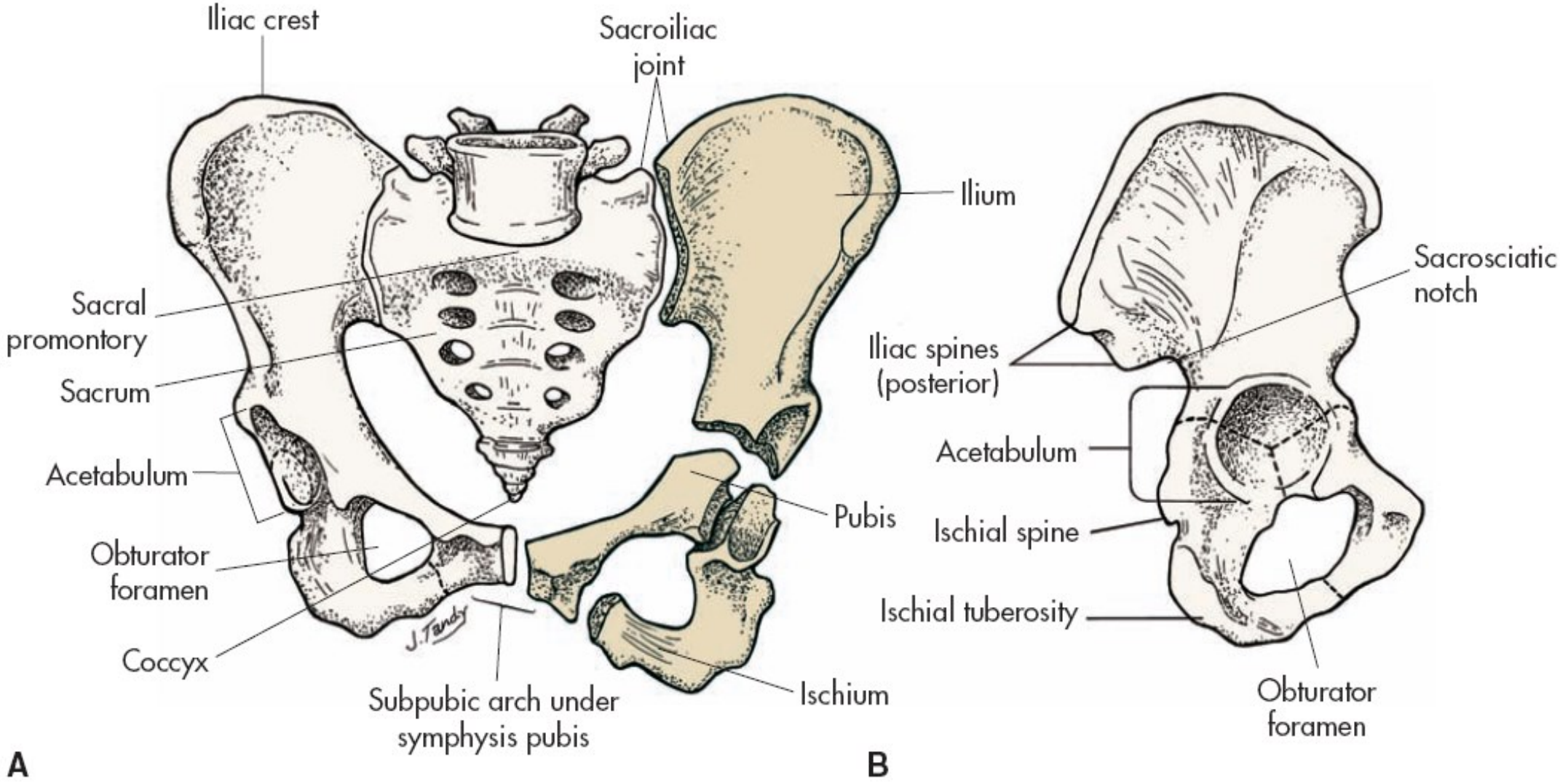
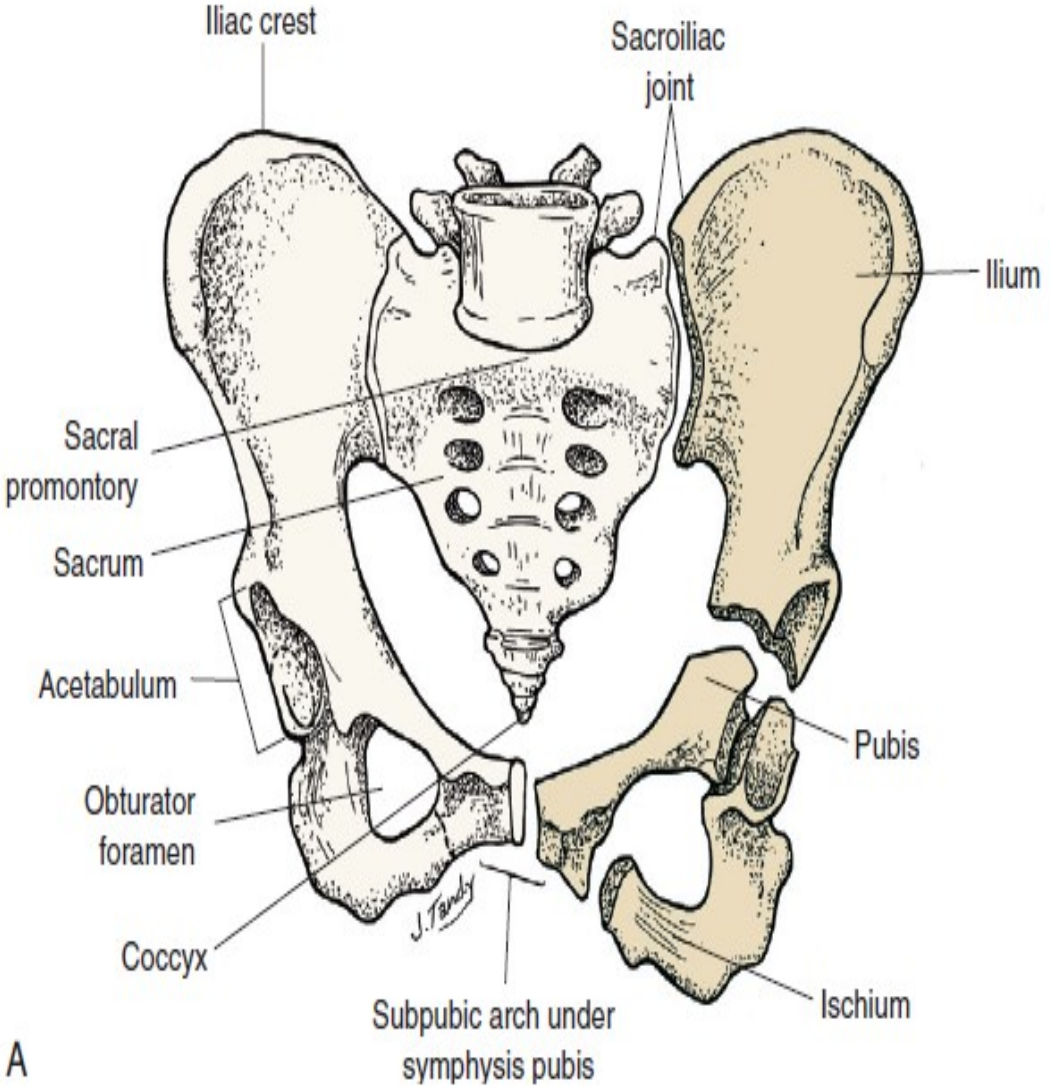


Fig. 4-4 Adult female pelvis. **A,** Anterior view. **B,** External view of innominate bone (fused).

2 innominate (hip) bones (consisting of ilium, ischium, and pubis), the sacrum, and the coccyx make up the four bones of the pelvis.

The bony pelvis serves 3 primary purposes:

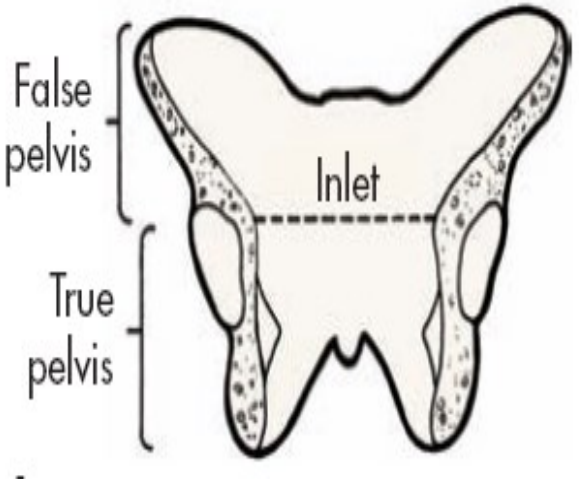
- Protection of the pelvic structures
- Accommodation of the growing fetus during pregnancy
- Anchorage ملاذ of the pelvic support structures.



The pelvis is divided into two parts:

1. False pelvis

- Is the upper portion above the pelvic brim or inlet

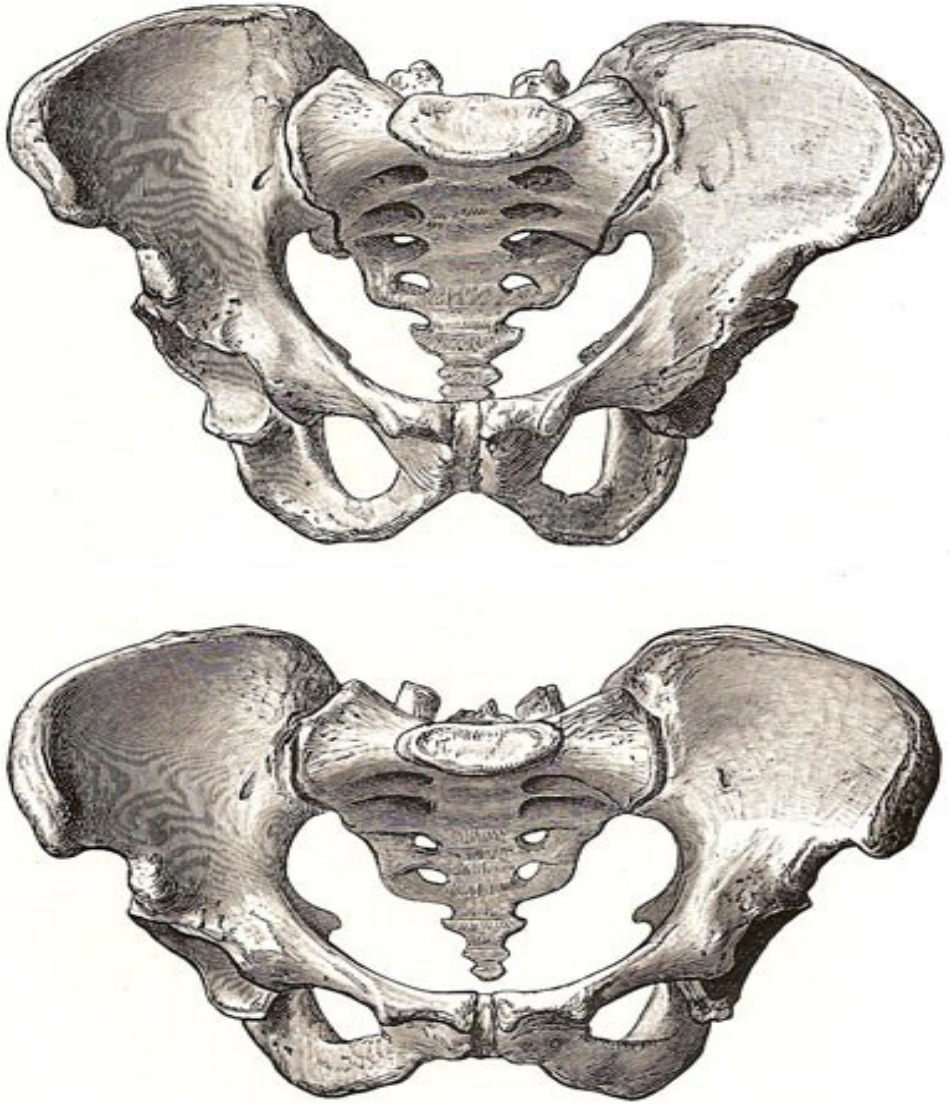


2. True pelvis

- Is the lower curved bony canal, which includes the inlet, the cavity, and the outlet through which the fetus passes during vaginal birth.
- The dimensions of the true pelvis of a women are very important because they must be large enough to allow the infant's head to pass during childbirth.

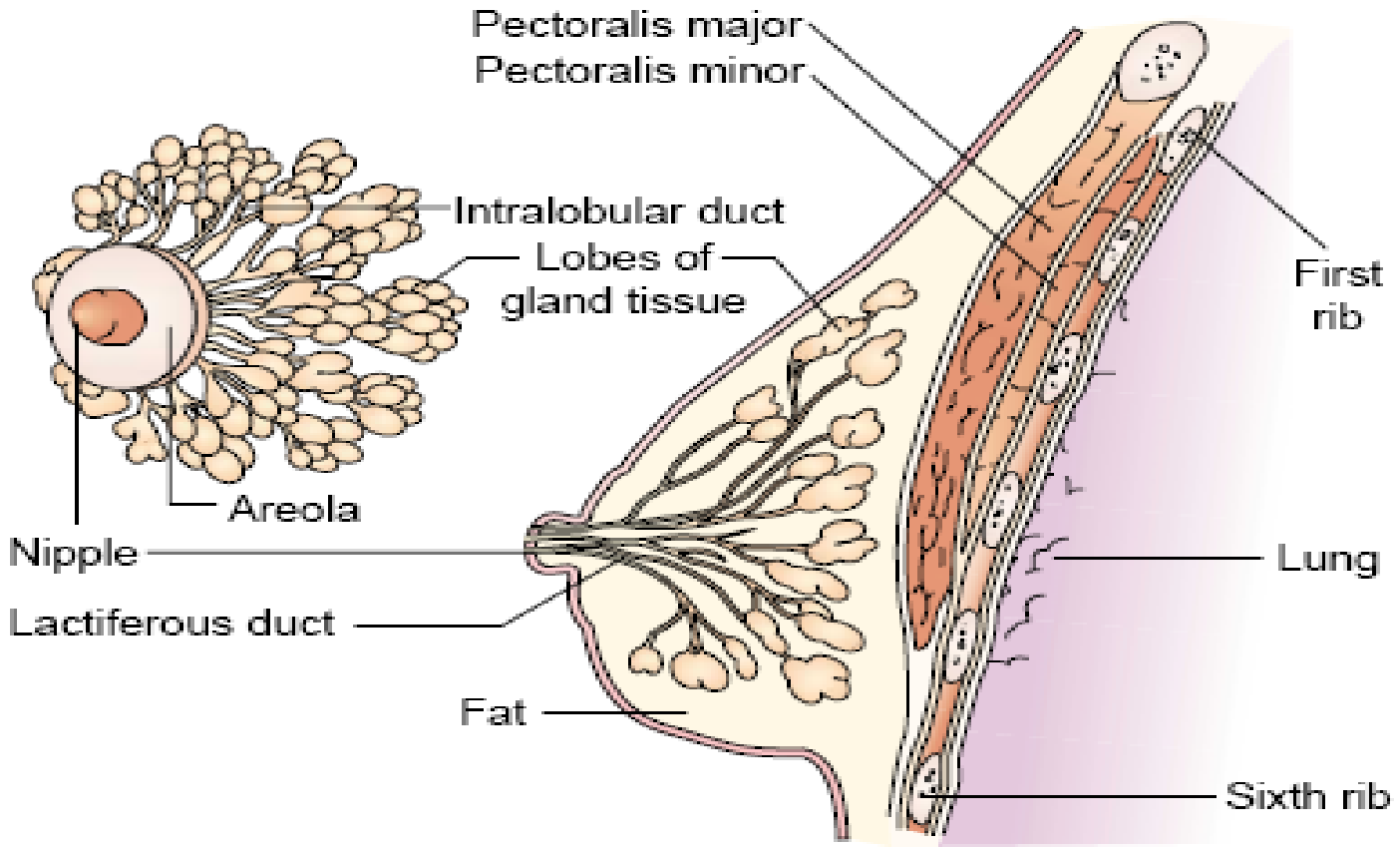
Characteristics that differ in the pelvis of the man and woman:

- The female inlet is larger and more circular
- The female sacrum is shorter and less curved
- The female ischial spines are shorter and farther apart, thus the outlet is larger
- The female pubic arch is more rounded because the angle of the pubic arch is greater.



Breasts

Cha



■ FIGURE 34-16 ■ The breast, showing the glandular tissue and ducts of the mammary glands.

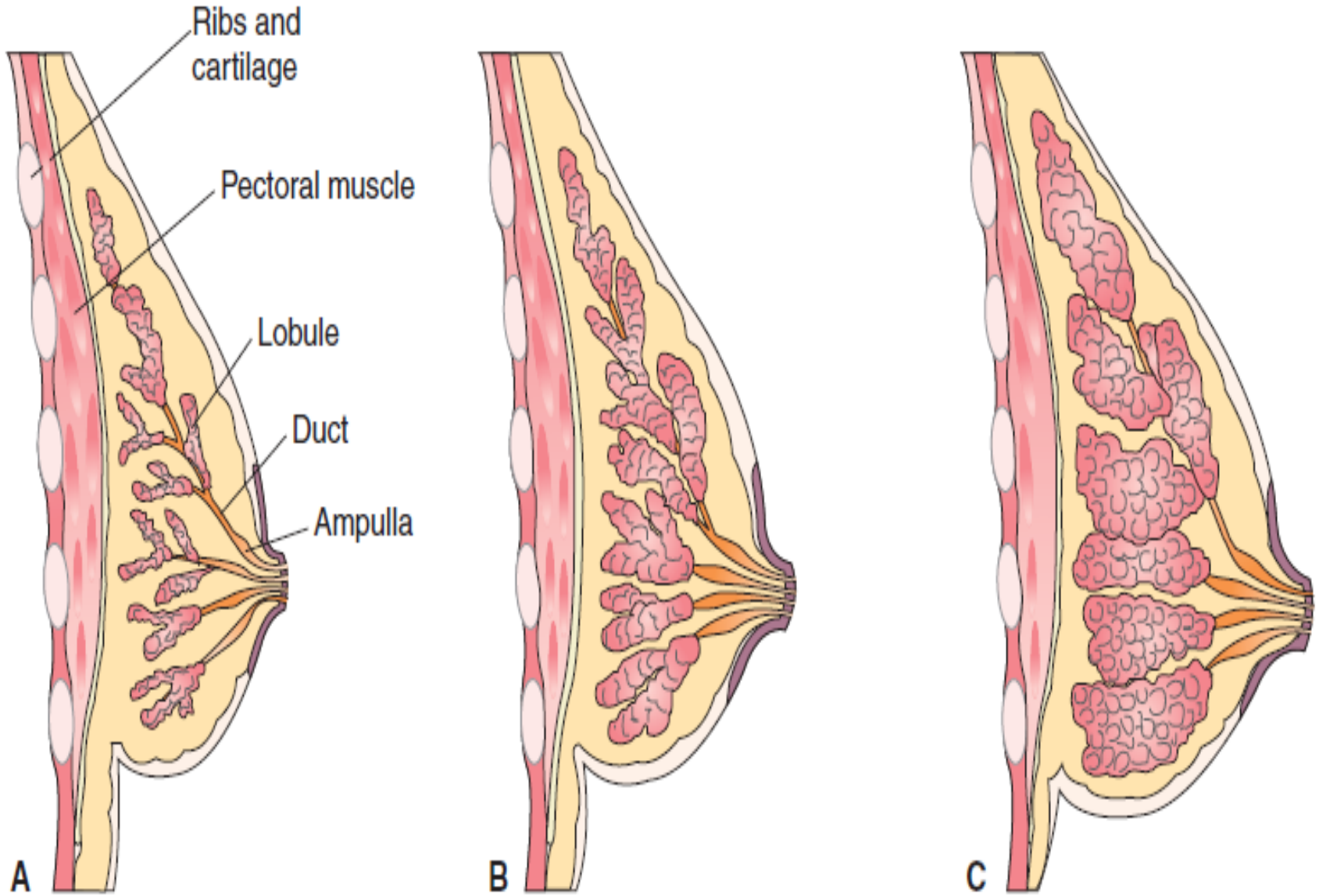
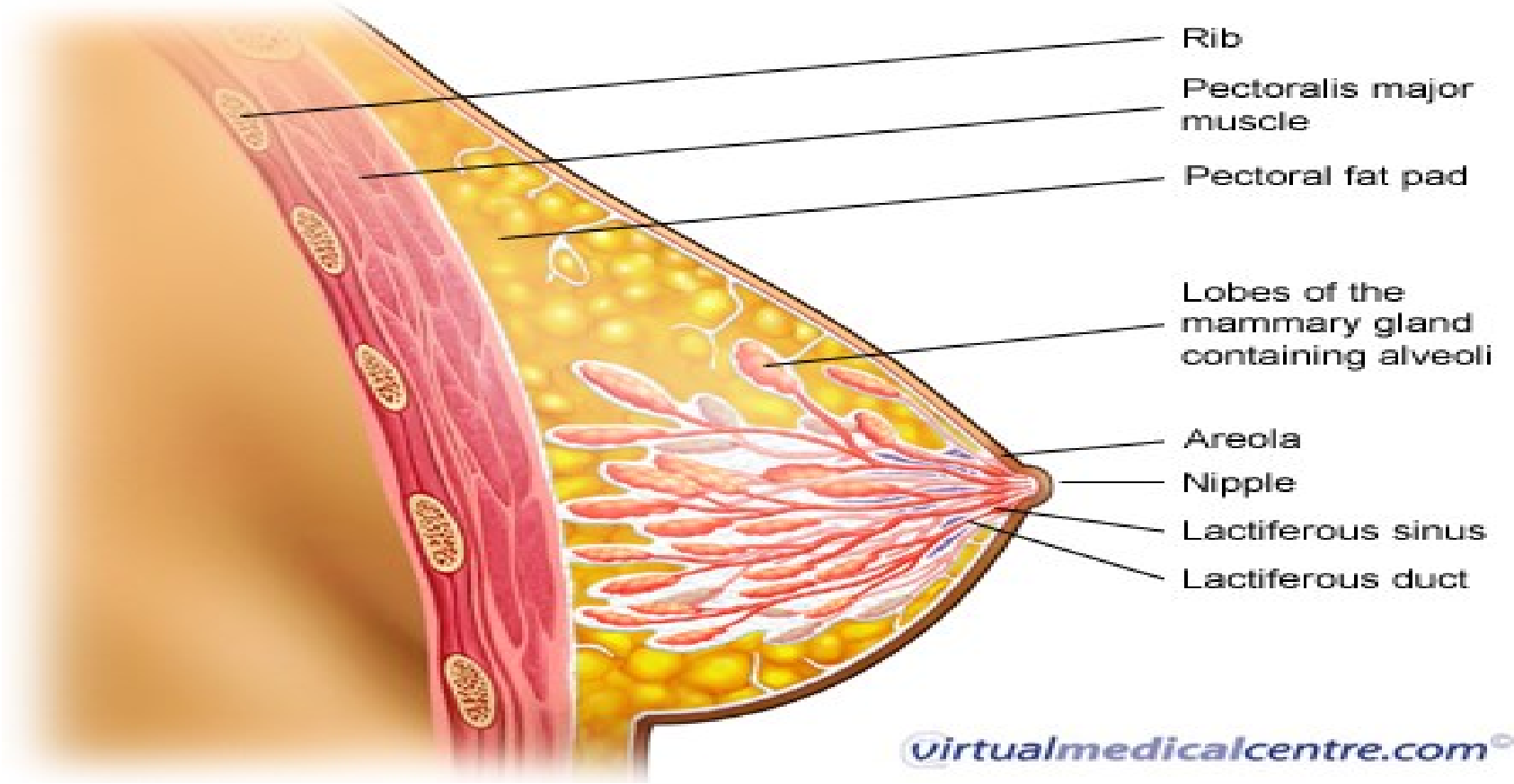


FIGURE 5.11 Anatomy of the breast. (**A**) Nonpregnant. (**B**) Pregnant. (**C**) During lactation.

- Paired mammary glands located between 2nd and 6th ribs.
- The breast are attached to the muscles by connective tissue called fascia.
- The contour should be smooth with no retractions, dimpling, or masses.
- Estrogen stimulates growth of breast, and the growth of the extensive ductile system.
- Also increase the vascularity of breast tissue.
- Progesterone increase in puberty causes maturation of mammary gland tissue.

- **Nipple**: The nipple is made up of epithelial, glandular, erectile, and nervous tissue.
- **Areolar tissue**: surrounds the nipple and is recognized as the darker, smooth skin between the nipple and the breast.
- **Montgomery's tubercles** درنات: The small bumps or projections on the areolar surface known as sebaceous glands that keep the nipple area soft and elastic

- Each mammary gland is made 15 to 20 lobes, which are divided into lobules.
- The route of descent of milk and other breast secretions is from alveoli to duct, to intralobar duct, to lactiferous duct and reservoir, to nipple.



Menstruation

- **Puberty** is a broad term that denote the *entire transitional stage between childhood and sexual maturity.*
- Menarche: first menstruation.
- ***A menstrual cycle*** (a female reproductive cycle) is episodic uterine bleeding in response to cyclic hormonal changes.
- The menstrual cycle prepares the uterus for pregnancy.
- When pregnancy does not occur, menstruation follows.

Menstruation: is the periodic uterine bleeding that begins approximately 14 days after ovulation.

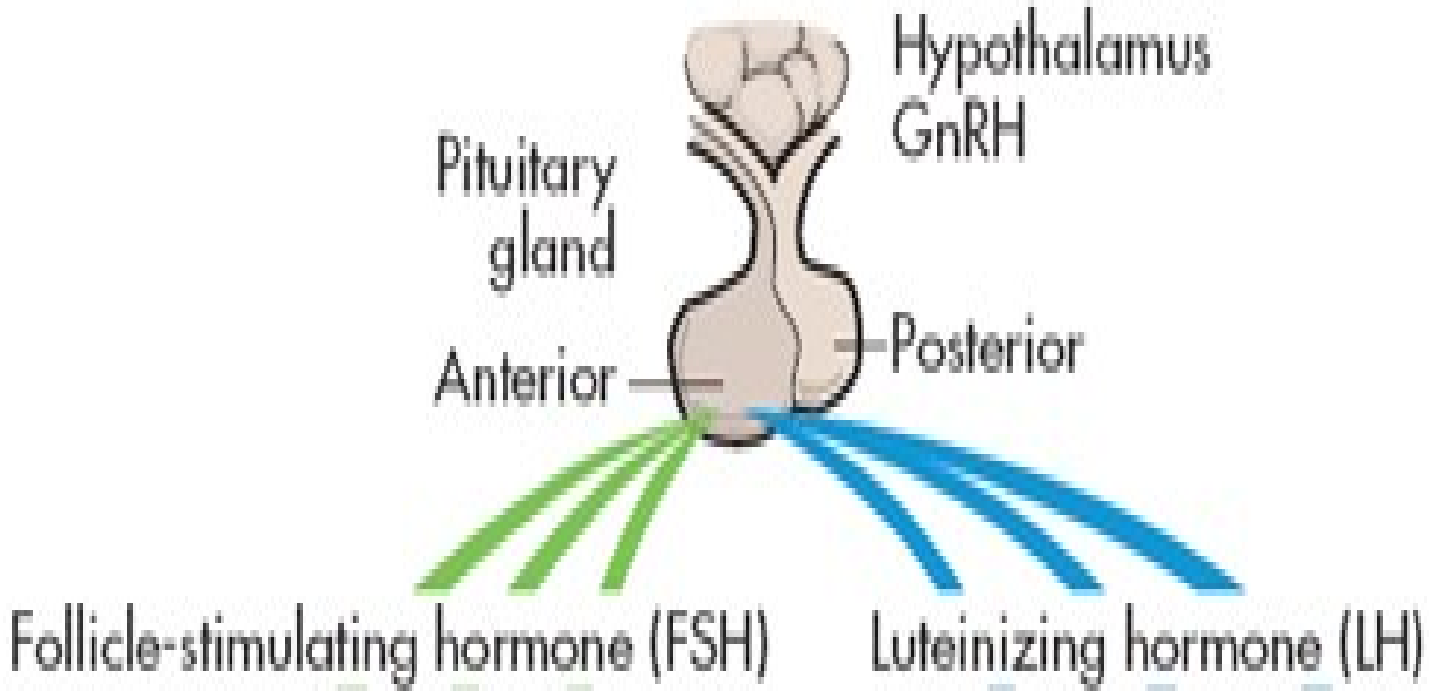
- The average length of a menstrual cycle is 28 days, but variations are normal.
- The first day of bleeding is designated as day 1 of the menses.
- The average duration of menstrual flow is 5 days (range of 3 to 6 days)
- The average blood loss is 50ml (range of 20 to 80 ml).

Physiology of Menstruation

- Four body structures are involved in the physiology of the menstrual cycle: the hypothalamus, the pituitary gland, the ovaries, and the uterus.

1. Hypothalamic-Pituitary Cycle

- Low blood levels of ovarian hormones stimulate the hypothalamus to secrete gonadotropin releasing hormone (GnRH). GnRH stimulates anterior pituitary secretion of follicle-stimulating hormone (FSH) and luteinizing hormone (LH).



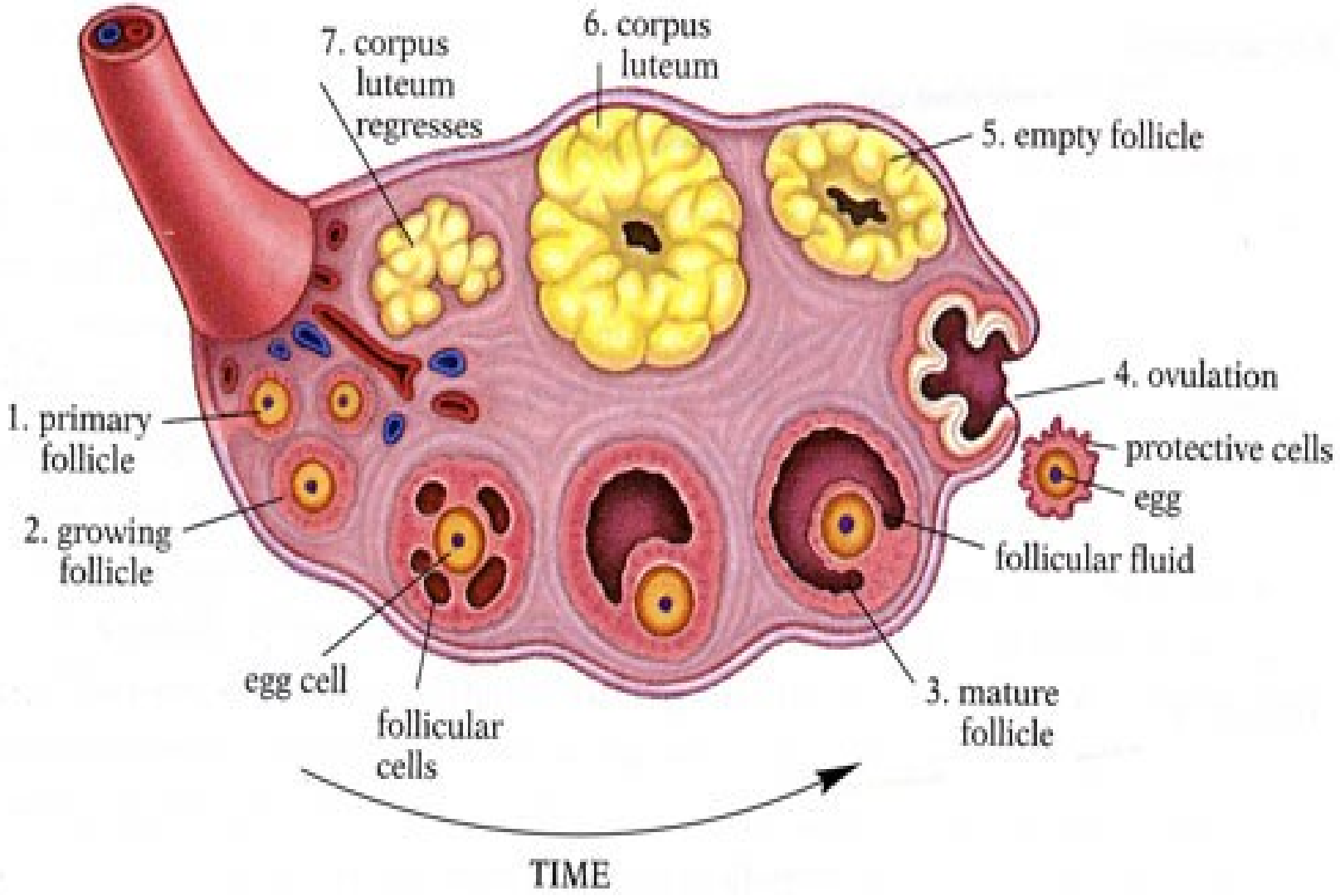
- **FSH**, a hormone that is active early in the cycle and is responsible for maturation of the ovum.
- **LH**, a hormone that becomes most active at the midpoint of the cycle and is responsible for ovulation, or release of the mature egg cell from the ovary, and growth of the uterine lining during the second half of the menstrual cycle.

2. Ovarian Cycle

- FSH and LH are called gonadotropic hormones because they cause growth (trophy) in the gonads (ovaries).

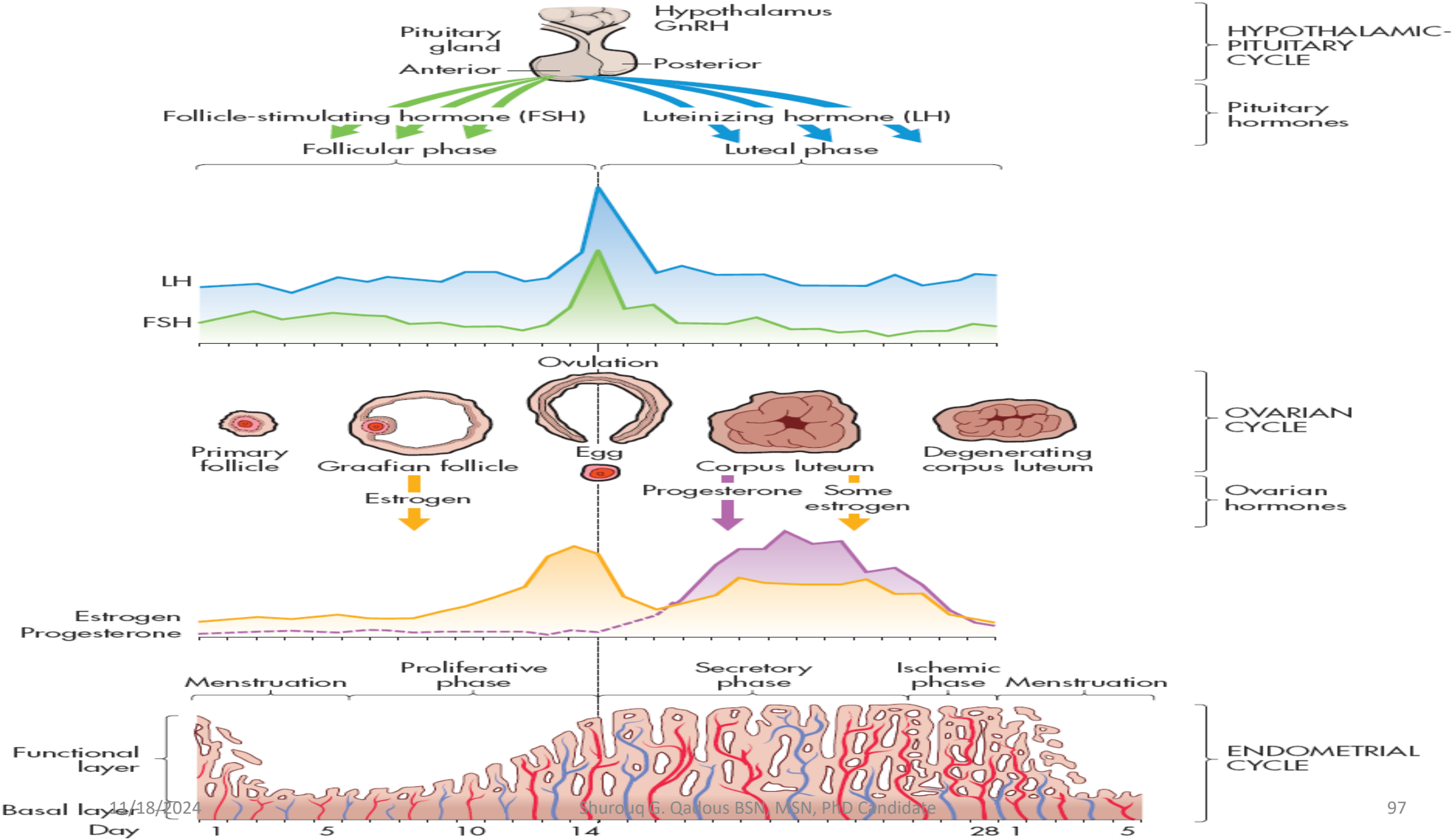
Follicular phase:

- The primitive graafian follicles contain immature oocytes.
- Before ovulation, from 1 to 30 follicles begin to mature in each ovary under the influence of FSH and estrogen.
- The oocyte matures, ovulation occurs, and the empty follicle begins its transformation into the corpus luteum. After ovulation, estrogen levels drop.


7. corpus luteum regresses
6. corpus luteum
5. empty follicle
4. ovulation
protective cells
egg
follicular fluid
1. primary follicle
2. growing follicle
egg cell
follicular cells
3. mature follicle
TIME

Luteal phase:

- Begins immediately after ovulation and ends with the start of menstruation.
- This postovulatory phase of the ovarian cycle usually requires 14 days (range of 13 to 15 days).
- The corpus luteum reaches its peak of functional activity 8 days after ovulation, secreting both estrogen and progesterone.


Hypothalamus
GnRH
Pituitary gland
Anterior
Posterior
Follicle-stimulating hormone (FSH)
Luteinizing hormone (LH)
Follicular phase
Luteal phase
HYPOTHALAMIC-PITUITARY CYCLE
Pituitary hormones
LH
FSH
Ovulation
Primary follicle
Graafian follicle
Egg
Corpus luteum
Degenerating corpus luteum
Estrogen
Progesterone
Some estrogen
OVARIAN CYCLE
Ovarian hormones
Estrogen
Progesterone
Menstruation
Proliferative phase
Secretory phase
Ischemic phase
Menstruation
Functional layer
Basal layer
Day
1
5
10
14
28
1
5
ENDOMETRIAL CYCLE

3. Endometrial cycle

4 phases of the endometrial cycle are:

1. **Menstrual phase**
2. **Proliferative phase**
3. **Secretory phase**
4. **Ischemic phase**

- During the **menstrual phase**, shedding of the functional two thirds of the endometrium is initiated by periodic vasoconstriction in the upper layers of the endometrium.

- **Proliferative phase** is a period of rapid growth lasting from about the fifth day to the time of ovulation.

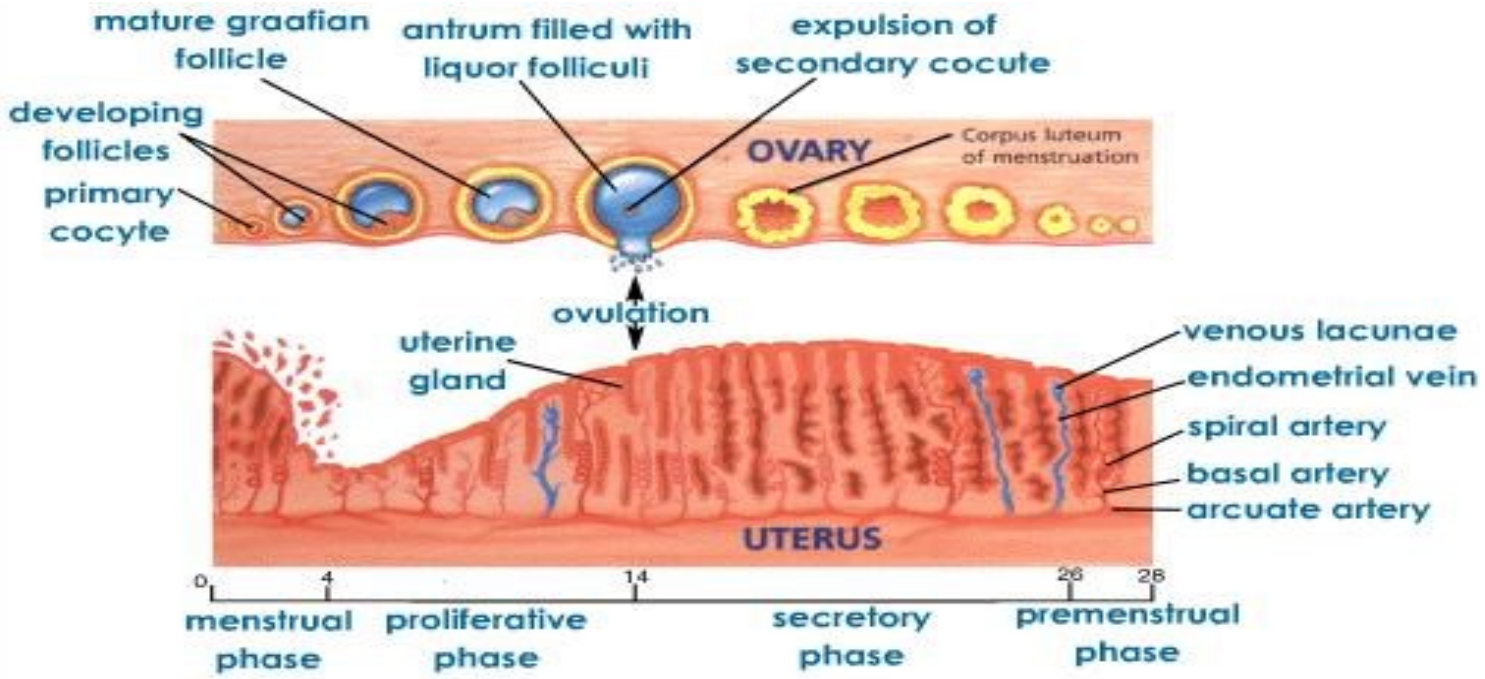
✓The endometrial surface is completely restored in approx. 4 days, or slightly before bleeding ceases.

✓ From this point on, an eightfold to tenfold thickening occurs, with a leveling of growth at ovulation.

✓This phase depends on estrogen stimulation derived from ovarian follicles (from approximately day 5 to day 14).

- **Secretory phase**: extend from the day of ovulation to approx. 3 days before the next menstrual period.

✓After ovulation, larger amounts of progesterone are produced. It becomes luxuriant with blood and glandular secretions, a suitable protective and nutritive bed for a fertilized ovum.



- **Ischemic phase**

✓If fertilization does not occur, the corpus luteum in the ovary begins to regress after 8 to 10 days. As it regresses, the production of progesterone and estrogen decreases.

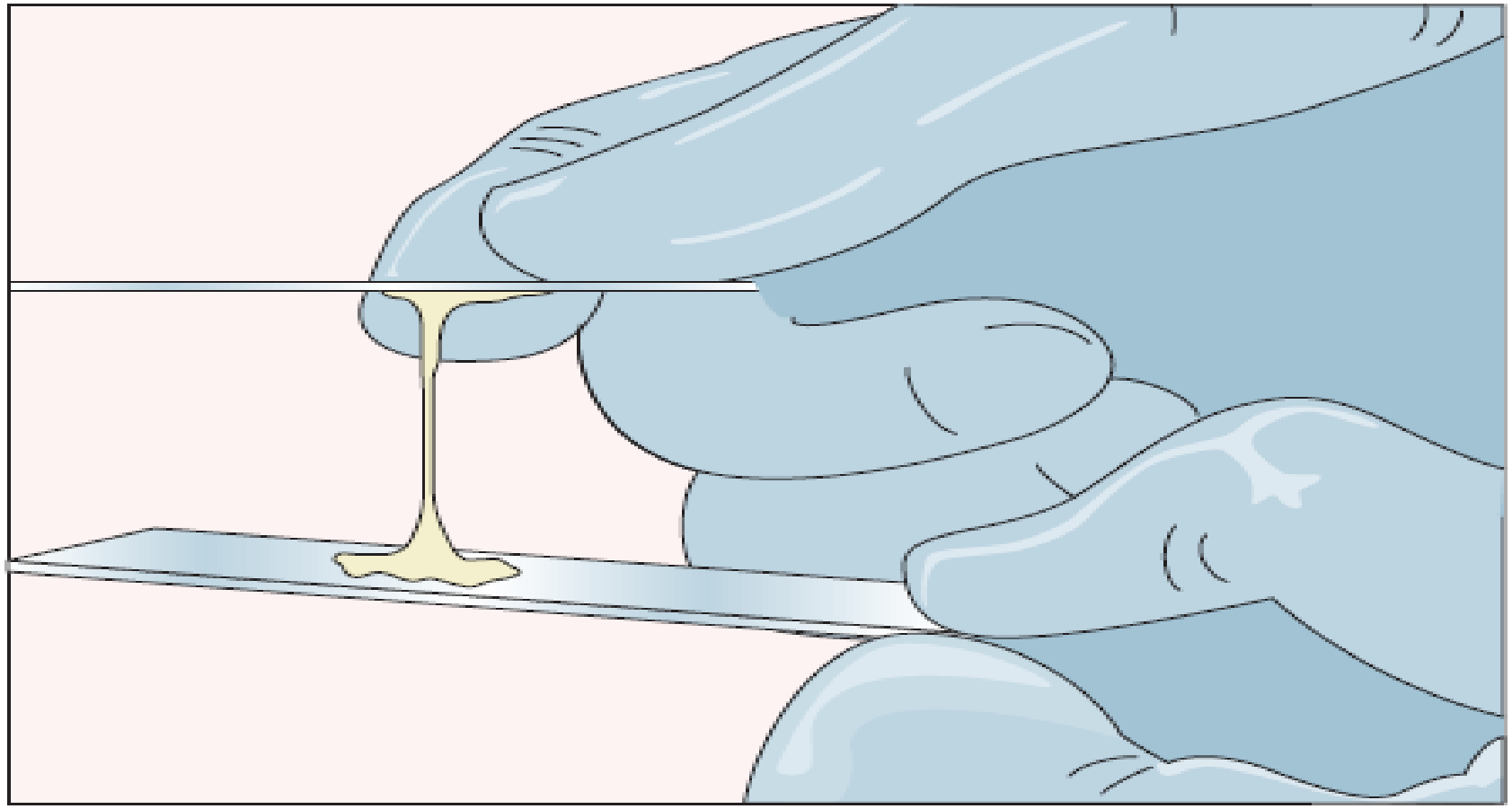
✓With the withdrawal of progesterone stimulation, the endometrium of the uterus begins to degenerate (at approximately day 24 or day 25 of the cycle).

✓ The capillaries rupture, with minute hemorrhages, and the endometrium sloughs off.

Other cyclic changes

- Before ovulation, the woman's basal body temperature (BBT) is often below 37˚C; after ovulation with rising progesterone levels, her BBT rises.
- Changes in the cervix and cervical mucus.

  Preovulatory and postovulatory mucus is viscous, so sperm penetration is discouraged. At the time of ovulation, cervical mucus is thin and clear. It looks, feels, and stretches like egg white. This stretchable quality is termed ***spinnbarkeit***. Some women experience localized lower abdominal pain, termed ***mittelschmerz*** الم الاباضة , *that coincides with ovulation.*



Spinnbarkeit is the property of cervical mucus to stretch a distance before breaking.

Prostaglandins

- Prostaglandins (PGs) are oxygenated fatty acids classified as hormones. PGs produced in most organs of the body, but most notably by the endometrium. Menstrual blood is a potent prostaglandin source.
- **PGs affect smooth muscle contractility and modulation of hormonal activity**.
- Indirect evidence supports PGs effects on ovulation, fertility, changes in Cx. and cervical mucus that affect receptivity to sperm, tubal and uterine motility, **sloughing of endometrium (menstruation), onset of abortion (spontaneous and induced), and onset of labor (term and preterm).**

Climacteric

- Transitional phase during which ovarian function and hormone production decline.
- **Menopause** refers to the last menstrual period.
- The average age at natural menopause is 51.4 years, with an age range of 35 to 60 years.
- Menopause is preceded by a period known as the **perimenopause**, during which ovarian function declines.
- Ova slowly diminish, and menstrual cycles are anovulatory, resulting in irregular bleeding, the ovary stops producing estrogen, and eventually menses no longer occurs. **This period lasts about 4 years.**

Thank You