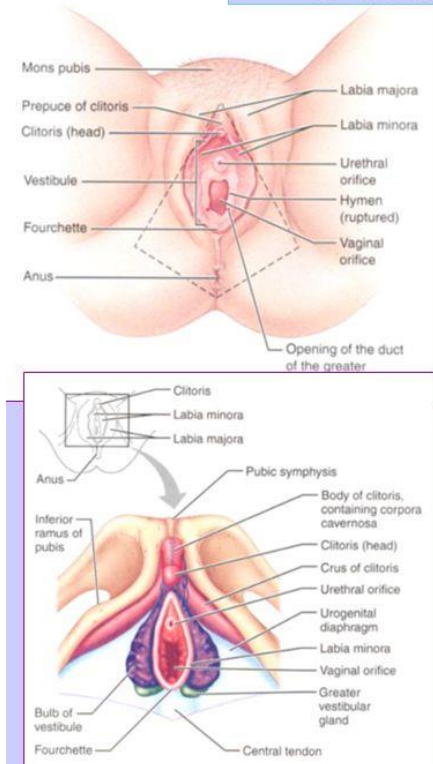


The external genitalia

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Female External Genitalia



- **Mons pubis**: fatty pad over pubic symphysis
- **Labia major**: fatty skin folds
- **Labia minor**: smaller, hairless folds inside labia major
 - Fourchette = junction of labia minora
 - Central tendon = perineal body
 - Vestibule: created by labia minor; opening for urethra and vagina
- **Clitoris**: superior to vestibule
 - crura, prepuce, corpus cavernosum
 - NO corpus spongiosum
- **Bulbs of Vestibule**: erectile tissue surrounding vaginal orifice
- **Greater vestibular glands**: either side of vaginal opening; secrete mucus

Is commonly called the vulva

Includes the

1. Mons pubis

Fibro fatty pad covered by hair bearing skin, which covers the body of pubis bone

2. labia majora

- Are two folds of skin with underlying adipose tissue either side of the vagina opening.
- They contain sebaceous and sweat glands and few specialized apocrine glands
- In the deepest part of each labium are the core of fatty tissue continuous with that of inguinal canal and the round ligament terminate her

3. labia minora

- Are two thin folds of skin that lie between the labia majora
- These vary in size and may protrude beyond the labia majora where they are visible but also my concealed by labia majora
- Anteriorly the divide into two to form prepuce and frenulum of clitoris (clitoris hood)
- Posteriorly they divide to form fold of skin called fourchette
- They contain sebaceous glands but have no adipose tissue
- They are not well developed before puberty and atrophy after menopause

4. Clitoris

- Is an erectile structure measuring approximately 0.3 -3.5 cm in length
- Body of clitoris made up of paired corpora cavernosa (which is columns of erectile tissue and vascular tissue)
- These become crura at the bottom of the clitoris

5. Vestibule

- Is the cleft between the two labia minora
- It contains opening of the urethra, Bartholin glands and vagina

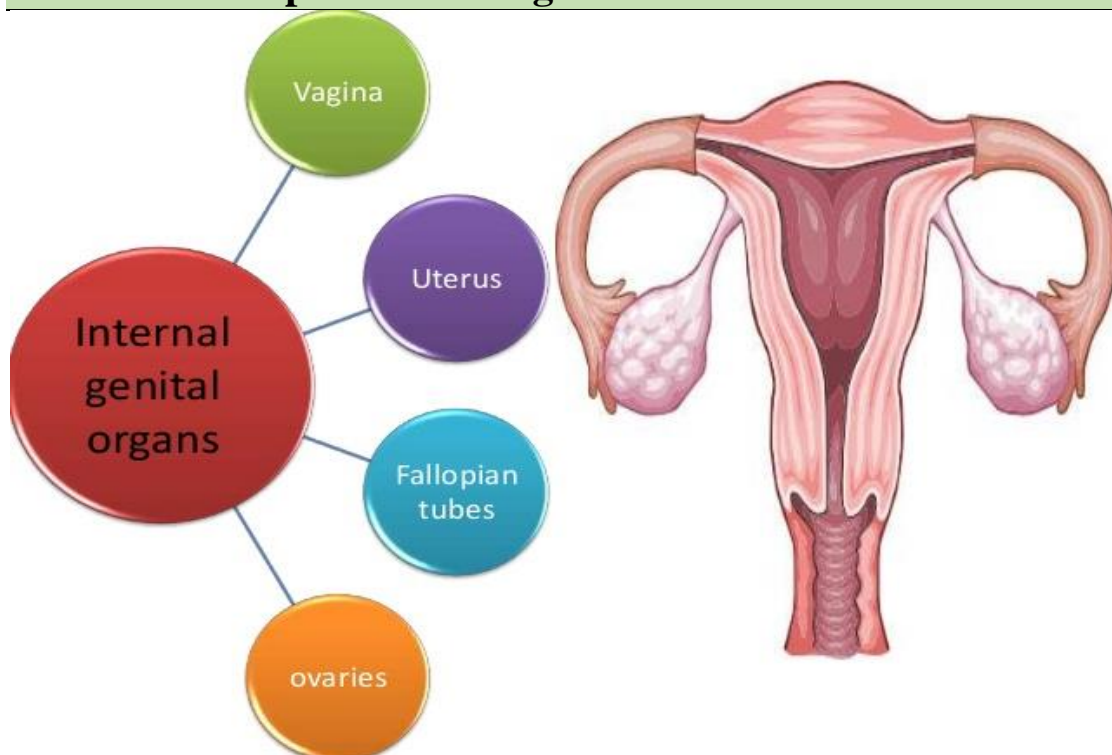
6. Bartholin glands

- Bilateral about the size of pea
- They opening via 2 cm duct into the vestibule below hymen
- Contribute to lubrication during intercourse

7. Hymen

- Is a thin covering of mucus membrane across the entrance of the vagina is usually perforated which allow menstruation?
- Remaining part of the hymen after rupture are called carunculate myrtiforms

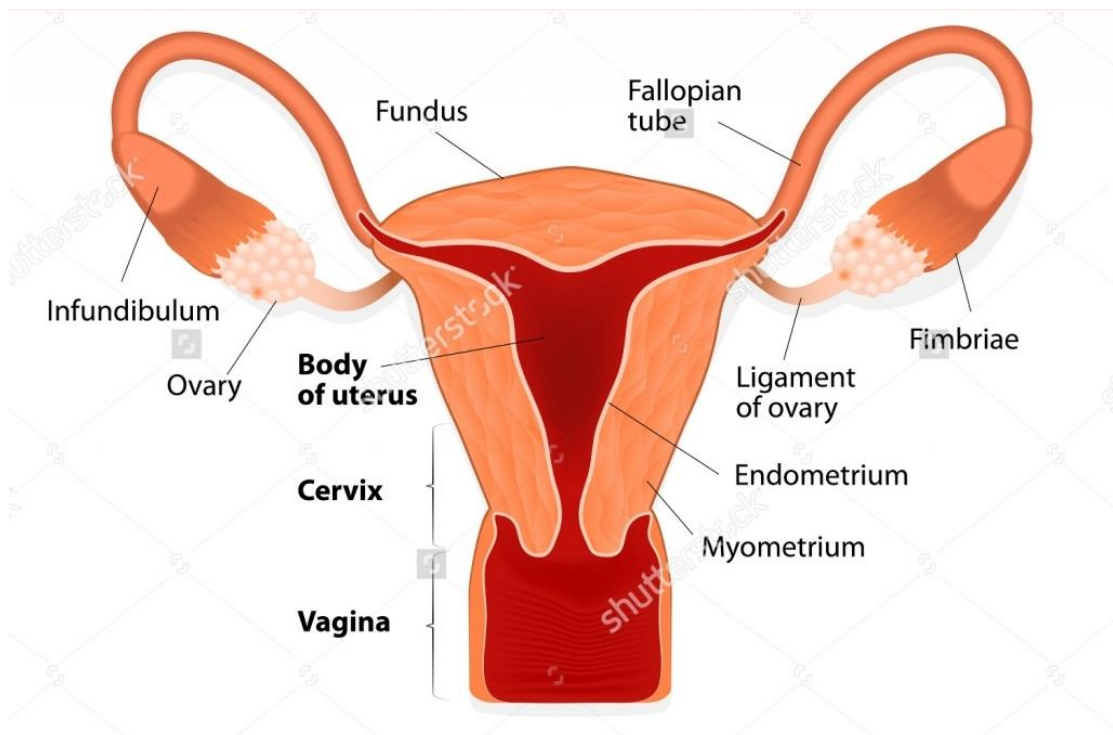
The internal reproductive organs



The vagina

- Is fibromuscular canal lined with stratified squamous epithelial that leads from the uterus to the vulva
- Its longer in the posterior wall 9 cm than in the anterior wall 7 cm
- The vaginal wall usually in apposition except at the vault where they are separated by the cervix

- The vault of the vagina is divided into four fornices posterior, anterior and two lateral
- The vaginal wall lined with transverse folds
- Has no gland and is kept moist by the secretions from uterine and cervical gland and from transudation from its epithelial lining
- The epithelium is thick and rich in glycogen but absent before puberty and after menopause due to lack of estrogen
- The upper posterior wall forms the anterior peritoneal reflection of the pouch of Douglas
- Middle third separated from rectum by pelvic fascia and the lower third abuts the perineal body
- Anteriorly the vagina is direct contact with bladder base
- Laterally the vagina is related to the cardinal ligament
- Below levator muscle and ischiorectal fossa



The uterus

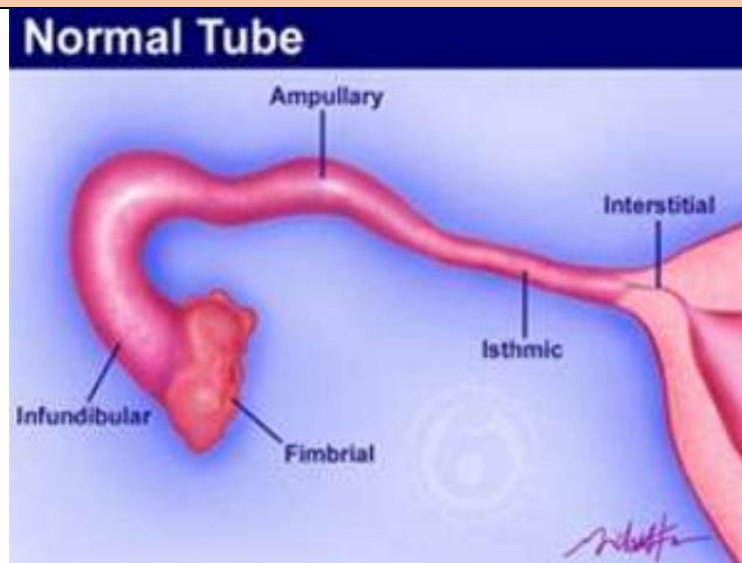
- Shape like inverted pear tapering inferiorly to the cervix and is situated entirely within the pelvis
- Hollow thick muscular structure
- 7.5 cm long 5cm wide 3 cm thick 70 gm weight
- Upper part called body, the area of insertion of each fallopian tube is called cornu , fundus is the part of the body above the cornu , isthmus is small lower constricted area
- Direction
 - anteversion the longitudinal axis of the uterus at right angle to the vagina
 - Ant flexion the uterus flexed forward on itself at the isthmus
 - Retroversion the uterus tilted backward 20 % of female
- Three layer outer serous layer (peritoneal) middle muscular layer (myometrium) and the inner mucous layer (endometrium)

- The myometrium forms the bulk and is made of interlacing smooth muscle fibers intermingling with areolar tissue blood vessel and lymphatics
- The endometrium is covered with single ciliated columnar epithelial varies thickness 1-5 according to the cycle

The cervix

- 2.5 cm length
- Lateral to cervix connective tissue called parametrium
- Upperpart mostly consist of involuntary muscle whereas lower part is mainly fibrous connective tissue
- The membrane of cervical canal (endocervix) has ant and post columns from which folds radiate out ,the arbour vitae .it has numerous deep glandular follicle that secrete clear alkaline mucus the main component of physiological vaginal discharge
- Ciliated columnar epithelial in upper 2/3 and change to stratified epithelial around the region of external os and the junction of these two types of epithelial is called squamocolumnar junction or transformation zone

The fallopian tubes



- Each tube is about 10 cm long run in upper margin of broad ligaments connect between the uterus one side and the peritoneal cavity on the other side
- Describe in four parts
 - ✓ The interstitial portion
 - ✓ The isthmus
 - ✓ The ampulla
 - ✓ The infundibulum or fimbrial portion
- The muscular fibers of the wall of the tube are arranged in the inner circular and an outer longitudinal layer
- There is no submucosa and there are no gland
- The epithelial of the tube contain ciliated cell

The ovary

- The size and appearance of the ovaries depend on the the age and the state of the menstrual cycle
- Almond shaped and measure approximately 3 cm long 1.5 cm width and 1 cm thick
- Each ovary is attached to the cornua of the uterus by ovarian ligment and at the hilum to the broad ligment by mesovarium which contains its supply of blood vessels and nerves
- The ovary is the only intraperitoneal structures not covered by peritoneum
- Has central vascular medulla and outer thicker cortex



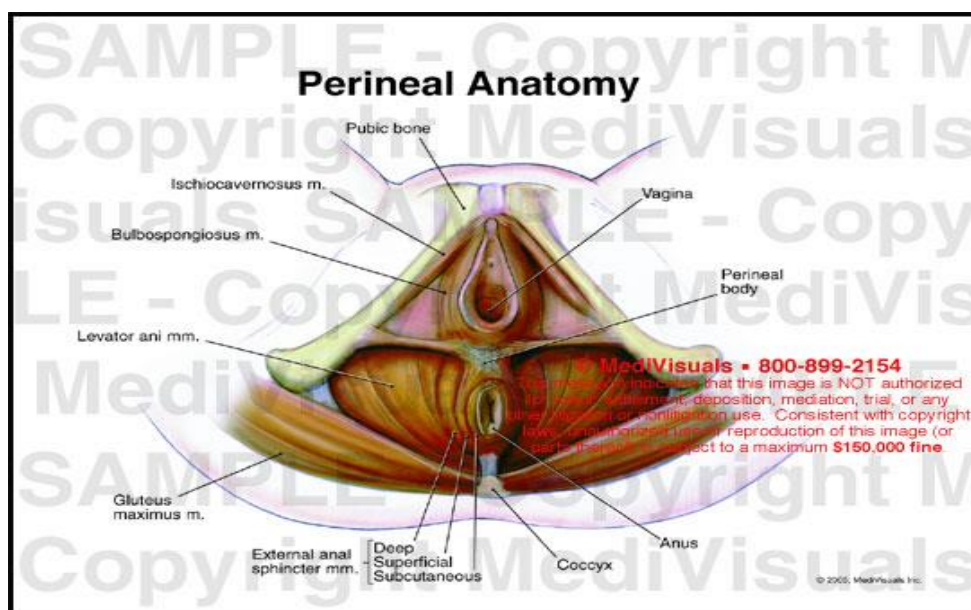
The vestigial structures

- Remains of the mesonephric duct and tubules are always present in young children
- Variable structures in adult the epoophoron ,paroophoron in the broad ligament
- The duct of Gartner is the caudal part of mesonephric duct running alongside the uterus to internal os

The pelvic muscles ligaments and fascia

The pelvic diaphragm

- Is formed by the levator ani muscles which are broad flat muscles the fiber of which pass down wards and inwards, one on either side constitute the pelvic diaphragm
- The muscle is described in two parts
- The pubococcygeus which arises from the pubis bone and the anterior part of the tendinous arch of pelvic fascia (white line)
- The iliococcygeus which arises from the posterior part of the tendinous arch and ischial spine



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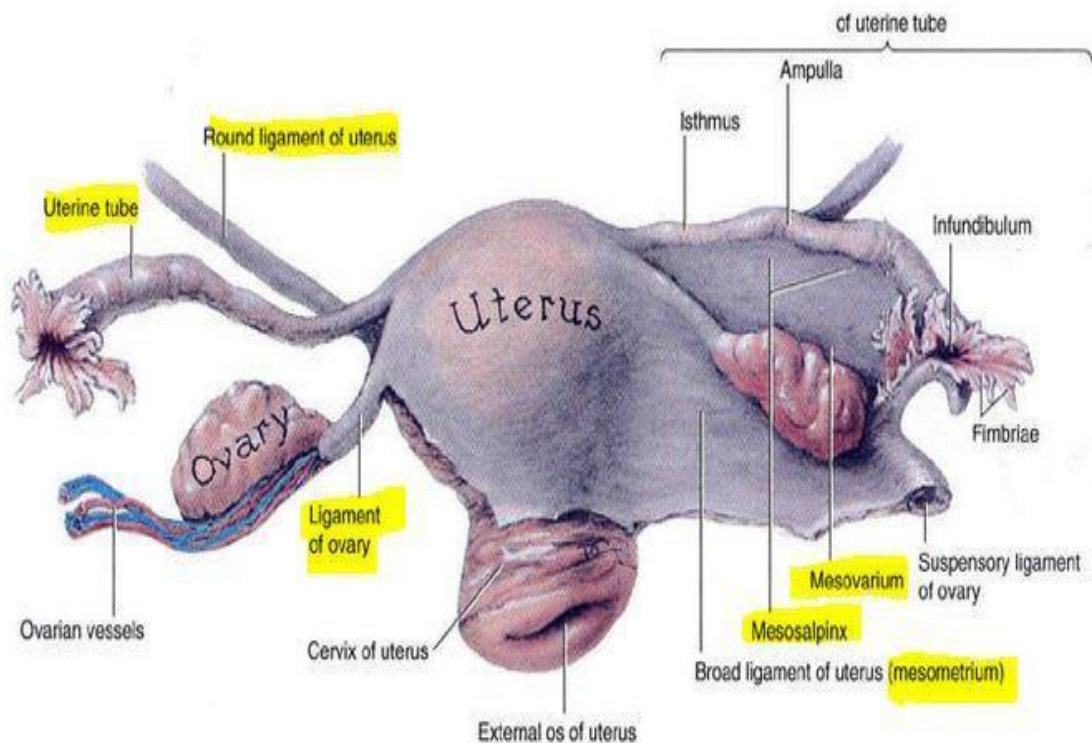
Urogenital diaphragm

Is triangular ligament made up of two layers of pelvic fascia which fill the gap between the descending pubic rami and lies beneath the levator ani muscles. the deep transvers perineal muscles lie between the two layers and diaphragm is pierced by the urethra and the vagina

The perineal body

This is mass of muscular tissue that lies between the anal canal and the lower third of the vagina Its apex is at the lower end of the rectovaginal septum at the point where the rectum and posterior vaginal walls come into contact. the base is covered with the skin and extend from the fourchette to the anus

Ligament



- Broad ligament its peritoneal reflection from lateral borders of the uterus so despite the name its not ligament and does not support the uterus
- The ovarian ligament from the medial pole of the ovary to the uterus just below the point of the entry of the fallopian tube
- The round ligament is the continuation of the same structure and run forwards under the anterior leaf of peritoneum to enter the inguinal canal ending in the subcutaneous tissue of the labium major
- The cardinal ligaments (transverse cervical ligaments) provide the essential support of the uterus and vaginal vault .these are two strong fan shaped fibromuscular bands which pass from the cervix and vaginal vault to the side wall of the pelvis on either side
- The uterosacral ligament run from the cervix and vaginal vault to the sacrum
- The bladder is supported laterally by the condensations of the vesical pelvic fascia one each side and by the sheath of pubocervical fascia which lie beneath it anteriorly

The blood supply

The ovary --- ovarian arteries from abdominal aorta

Right vein to inferior vena cava, left vein to left renal vein

The uterus --- main supply from uterine artery, which is branch of internal iliac artery

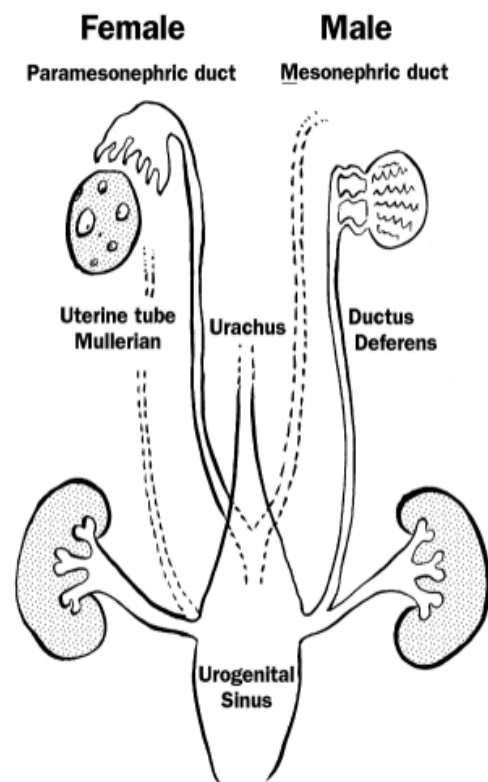
Uterine branch of ovarian artery on each side

Other parts of the pelvic organs are supplied by branches of internal iliac artery, which includes vaginal artery, vesical artery, rectal artery, pudendal artery

Major nerve supply of the pelvis comes from the pudendal nerves, which arise from the second third and fourth sacral nerves

The embryology

- The primitive gonad is formed between 5-7 weeks of gestation, when undifferentiated germ cells migrate from the yolk sac to the genital ridges
- In the absence of male determinants, the primitive gonad becomes an ovary
- Granulosa cells derived from the proliferating coelomic epithelium surround the germ cells and form primordial follicles
- Theca cells develop from the proliferating coelomic epithelium and are separated from the granulosa cells by basal lamina
- The maximum number of primordial follicles is reached at 20 weeks gestation when at this time there are six million primordial follicles present
- The number of these reduce by atresia and by birth one to two million are present. atresia continues throughout childhood and by menstruation 300 000 – 400 000 are present



The uterus and vagina

The genital system develops in close association with the urinary system

5th week of embryonic life the nephrogenic duct develops from the mesoderm and forms the urogenital ridge and mesonephric duct

- The mesonephric duct (wolffian duct) develops under the influence of testosterone into vas deferens, epididymis and seminal vesicle
- The female reproductive tract develops from paired ducts which are adjacent to the mesonephric duct and so are called the paramesonephric ducts or Müllerian ducts. These extend caudally to project into the posterior wall of the urogenital sinus as the müllerian tubercle

- These fuse in the midline distally to form the uterus ,cervix and proximal two thirds of the

Vagina

- The unfused caudal segments form the fallopian tubes
- The distal vagina is form the sinovaginal bulb in the upper portion of urogenital sinus

The external genitalia

- 5th to 7th weeks of life the cloacal folds which are a pair of swellings adjacent to the cloacal membrane fuse anteriorly to become the genital tubercle.this will become the clitoris
- The perineum develops and divides the cloaca membrane into an anterior urogenital membrane and posterior anal membrane
- The cloacal folds anteriorly are called the urethral folds which form the labia minora
- Another pair of folds within the cloacal membrane form the labioscrotal fold which eventually become the labia majora
- The urogenital sinus become the vestibule of the vagina
- The external genitalia are recognizable female by the end of 12 weeks gestation

Quiz (True & False)

1. The vagina has two wall anterior and posterior one, which are equal in length
2. The vaginal wall is rich in glandular tissue which responsible on acidity of vaginal discharge
3. The serous layer of the uterus is vary in its thickness according to menstrual cycle
4. The widest part of fallopian tube is isthmus part
5. The ovary has central thick avascular medulla and outer loose cortex
6. The perineal body is a mass of muscular tissue lies between the urethra and lower third of the vagina
7. The broad ligament is the main support of the uterus
8. The ovarian artery is branch of internal iliac artery
9. The fused mesonephric duct form the future uterus and cervix
10. The external genitalia are recognize as female by the 9 weeks gestation