

The Female and Male External Genitalia

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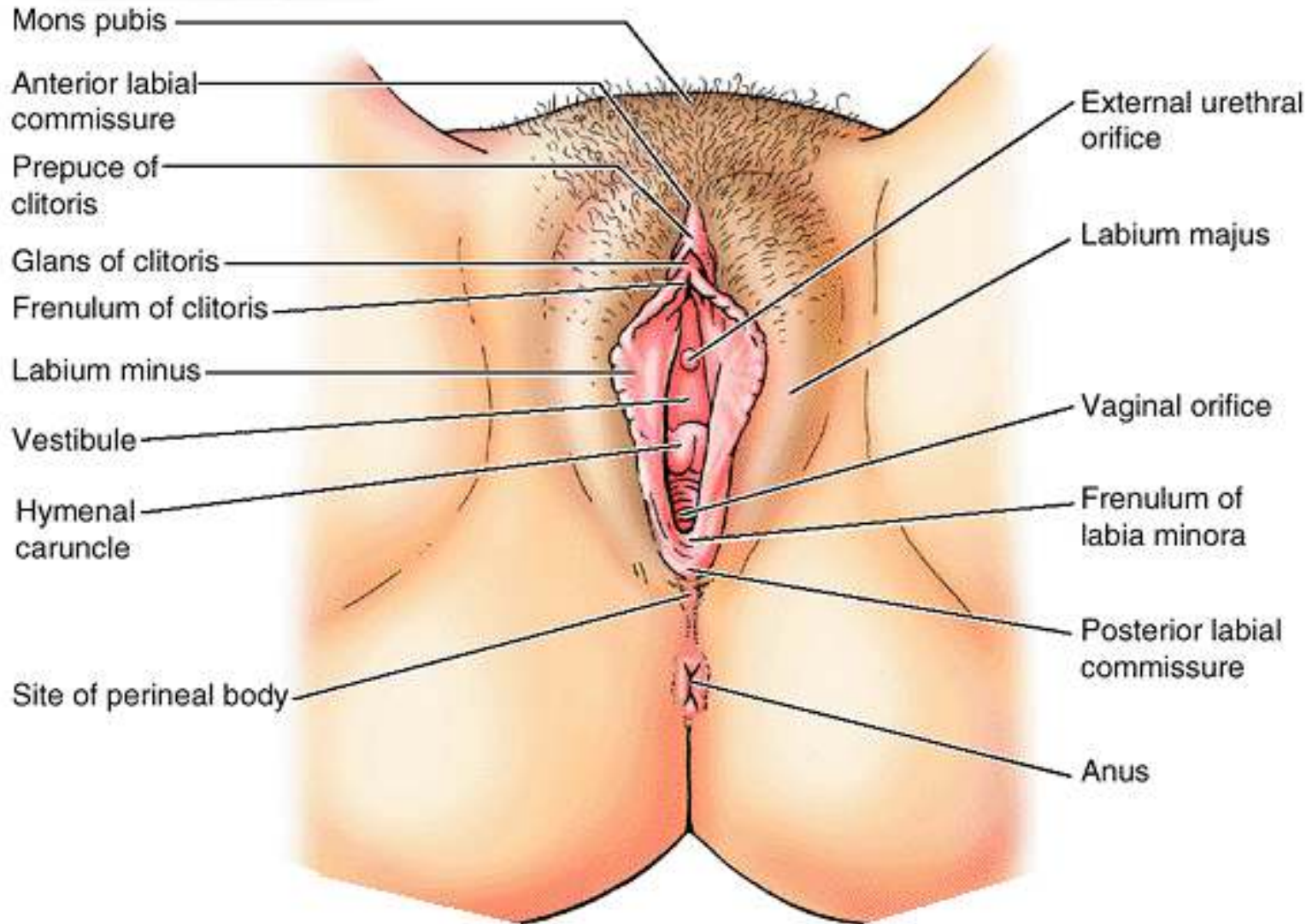
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Anatomy of the female external genitalia

- This consists of :
- The vulva which is made up of:
 - The clitoris
 - Vestibular apparatus
 - Labia majora
 - Labia minora
- Mons Pubis
- Vestibule
- External urethral orifice
- Vaginal orifice
- The hymen and fourchette

Anatomy of the female external genitalia



Mons Pubis

- Soft rounded eminence of fatty tissue covering the front of symphysis pubis
- Covered by coarse hair after puberty .
- The fatty tissue increases at puberty but atrophies after menopause
- Acts as a cushion that prevents the pubic bones from smacking against each other during sexual act

Labia Majora

- Two folds of skin containing fats
- Meet anteriorly and posteriorly to form the anterior and posterior commissures respectively. The later usually disappears after the 1st childbirth.
- The outer skin is covered by hairs.
- The inner surface is smooth, hairless and contains sebaceous and sweat glands
- Its deep fatty portions contain the terminal portions of the round ligament of the uterus
- It protects the inner more sensitive parts of the vulva.
- It becomes prominent from puberty onwards.
- It is homologous to the scrotum in the male .

Labia Minora

- Two delicate folds of skin lying medial to labia majora and consist of spongy connective tissue containing erectile tissue and many small blood vessels
- The skin is pink and contains numerous sebaceous glands
- Surround the vestibule into which both the external urethral and the vaginal orifices open
- Anteriorly, they divide into two folds (prepuce of the clitoris & frenulum of the clitoris)
- Posteriorly they unite to form the fourchette (frenulum of the labia minora)

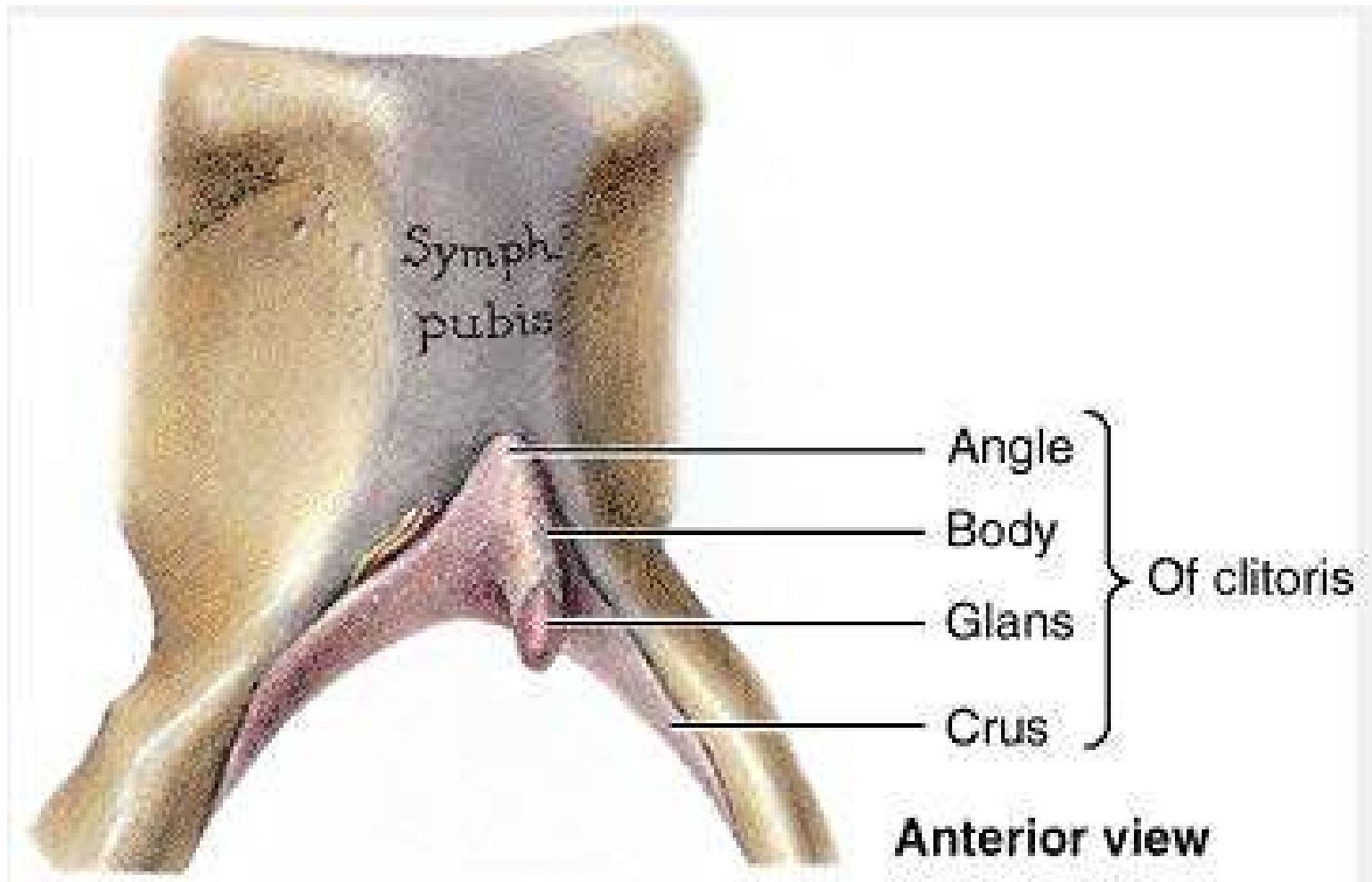
The Vestibule of the vulva

- Is a triangular space bounded by:
 - Clitoris anteriorly.
 - Labia minora laterally.
 - Fourchette posteriorly
- Contains the opening of four ducts or canals:
 - Urethra anteriorly
 - Vagina posteriorly
 - Tiny ducts of Bartholin glands on each side .

The Clitoris

- Homologue of the penis.
- Located where the labia minora meet anteriorly
- Has the following parts:
 - Root formed by the two crura attached mainly to ischiopubic rami
 - The shaft formed by the union of the two crura forming the corpora cavernosa.
 - Glans which caps the shaft
 - Prepuce forms a tiny hood above the glans
 - Frenulum of the clitoris which lies posteriorly
- It has abundant vascular supply from the dorsal artery of the clitoris.

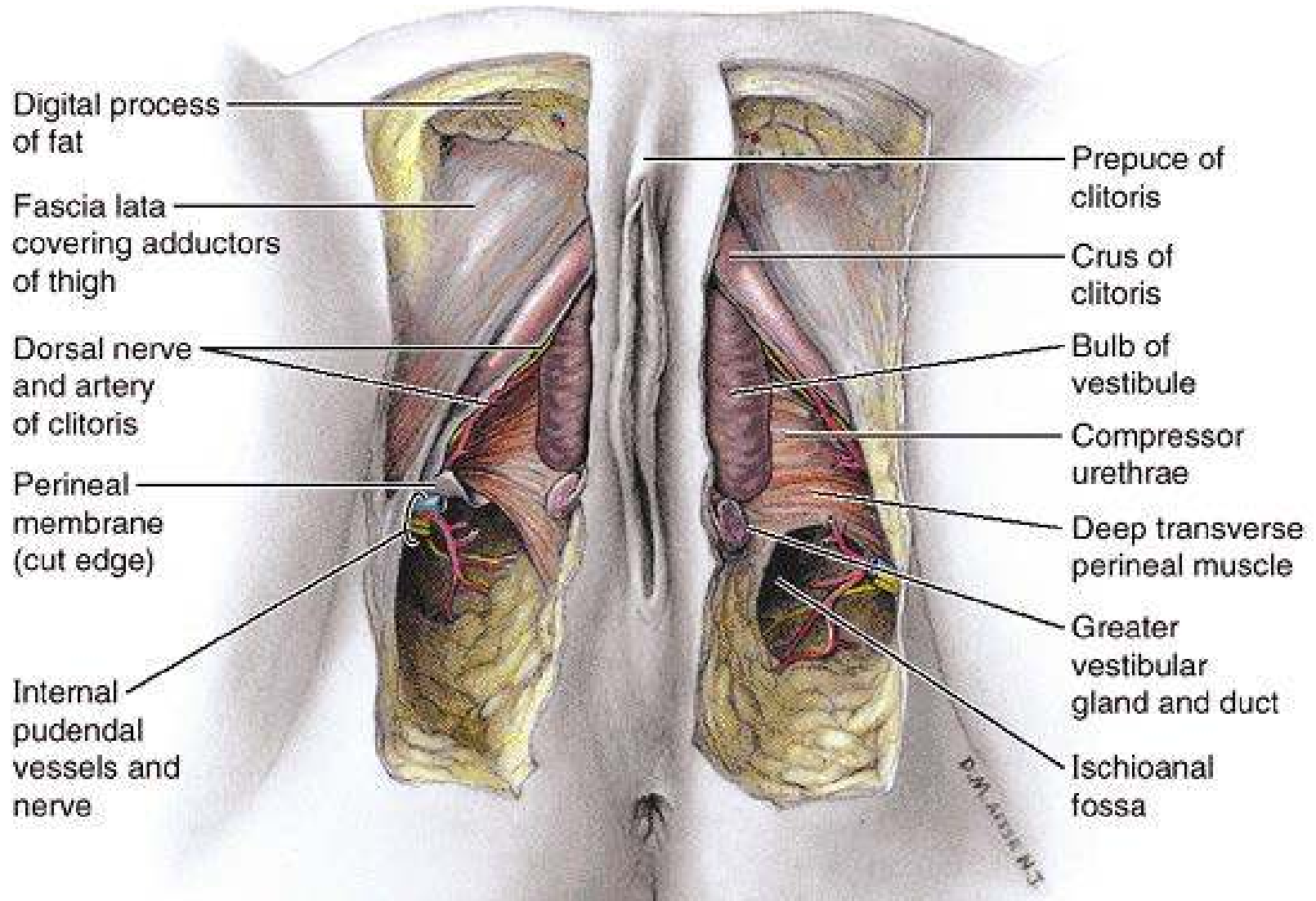
The Clitoris



Bulbs of the Vestibule

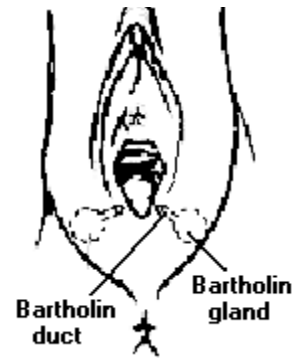
- Paired masses of elongated erectile tissue, approximately 3 cm in length.
- Lies along the sides of the vaginal orifice, deep to the labia minora.
- Lies immediately inferior to the perineal membrane
- Covered inferiorly and laterally by the bulbospongiosus muscles extending along their length.
- The bulbs are homologous with the bulb of the penis. During sexual arousal, contraction of the veins within them leads to swelling (erection) of the vulvae

Bulbs of the Vestibule



Greater Vestibular Glands

- Paired, tiny, oval shaped glands; homogenous to the Cowper's glands in the male
- Also called Bartholin glands
- Located in the superficial perineal pouch posterolateral to the vagina opening
- The ducts open into the vestibule on each side of the vagina orifice
- The duct is about 1.25 - 2 cm in length.
- Secrete mucus into the vestibule during sexual arousal



Lesser Vestibular Glands

- The lesser vestibular glands are small glands on each side of the vestibule.
- Open into the vestibule between the urethral and the vaginal orifices.
- Secrete mucus into the vestibule, which moistens the labia and vestibule.

External Urethral Meatus:

- Triangular slit in the anterior part of the vestibule posterior to the clitoris and anterior to the vagina.
- Contains the opening of the paired Skene's ducts, which open in the urethra few millimeters from the external urethral meatus .

Arterial supply of the vulva

- Extremely vascular.
- Arteries are:
 - Superficial and deep external pudendal arteries: from femoral artery
 - Internal pudendal artery: from internal iliac artery, and ends as dorsal artery of the clitoris

Venous drainage of the vulva

- Veins corresponding to arteries .The veins form a rich plexus that enlarge during pregnancy.
- Saphenous vein drains portions of the vulva.

Lymph drainage of the vulva

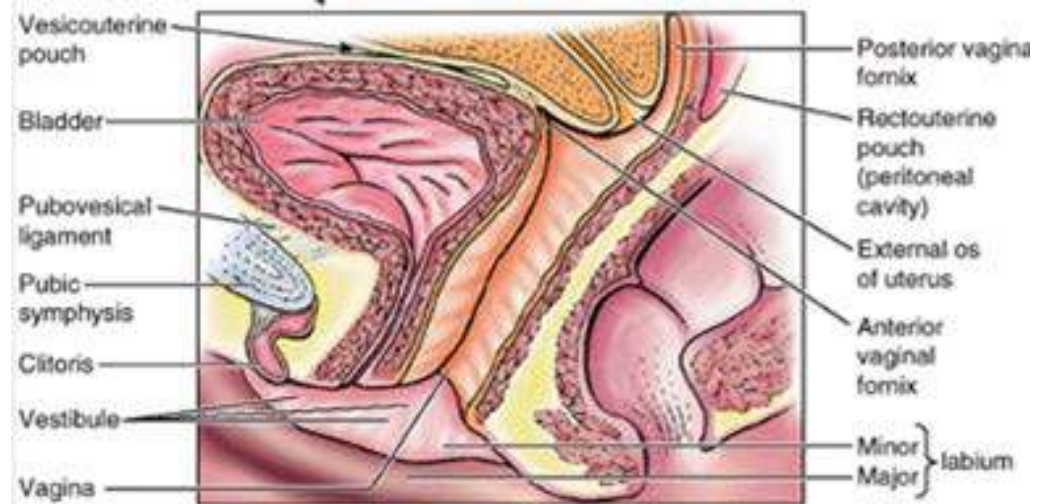
- Drain into the superficial inguinal lymph glands on either side and then to the deep inguinal and femoral nodes
- The gland of Cloquet drains the clitoris directly

Nerve supply of the vulva

- Derived from the ilio-inguinal nerve (most anterior part)
- Posterior femoral cutaneous nerve (most posterior part)
- Labial and perineal branches of the pudendal nerve

The Vagina

- Fibromuscular tube, H-shaped on cross section connecting the vulva to the uterus.
- It extends upwards and backwards (direction) making an angle 60 degree with the horizontal plane.



The Vagina

The vagina is divided into 3 parts:

- Upper vagina:
 - wide and capacious
 - above the levator ani
- Middle vagina:
 - narrower
 - bounded by the levator ani
- Lower vagina :
 - Partially closed by the hymen and perineal muscle

The Vagina vault

- The uterine cervix projects into the vault of the vagina, dividing it into four fornices :
 - The anterior fornix is related to the bladder.
 - The posterior fornix is related to the pouch of Douglas
 - The two lateral fornices are related to the base of the broad ligaments, parametrium, uterine artery and ureter

The Hymen

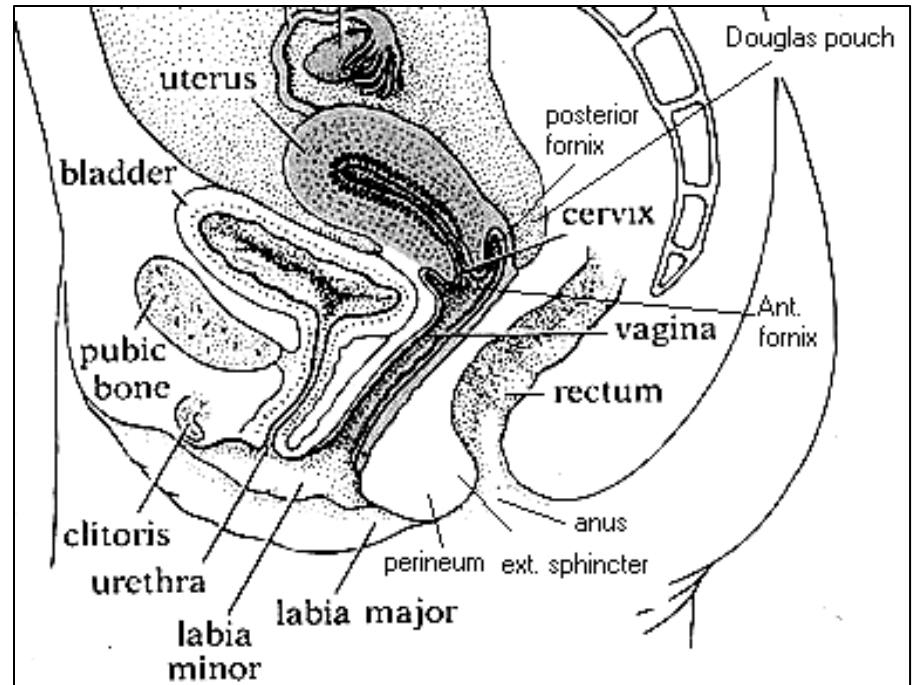
- A thin annular fold of mucous membrane immediately within the vaginal orifice surrounding the lumen
- Only remnants, called hymen caruncles, remain after its rupture
- Hymen caruncles demarcates vestibule from the vagina
- Its condition provides vital evidence in cases of child abuse and rape

Female circumcision

- Excision of prepuce of the clitoris with or without:
 - Excision of part or the whole of the clitoris,
 - Excision of part or the whole of the labia minora
 - In the extreme cases called infibulation, it involves union of the two labia minora
- Thought to inhibit sexual arousal and gratification.
- Now being discouraged globally

Relations of the vagina

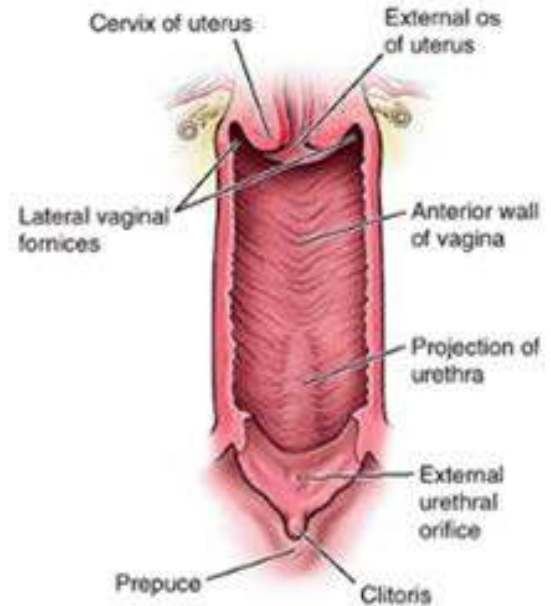
- Anterior relations:
 - Upper 1/3: bladder trigone .
 - Lower 2/3: urethra .
- Posterior relations:
 - Upper 1/3: peritoneum of Douglas pouch
 - Middle 1/3 : rectum ampulla
 - Lower 1/3 : perineal body .



Relations of the vagina

The lateral wall is related from above downward to:

- The parametrium,
- Cardinal ligament (through which the ureter pass 1cm lateral to the vagina),
- Urogenital diaphragm, levator ani
- The bulb of the vestibule.



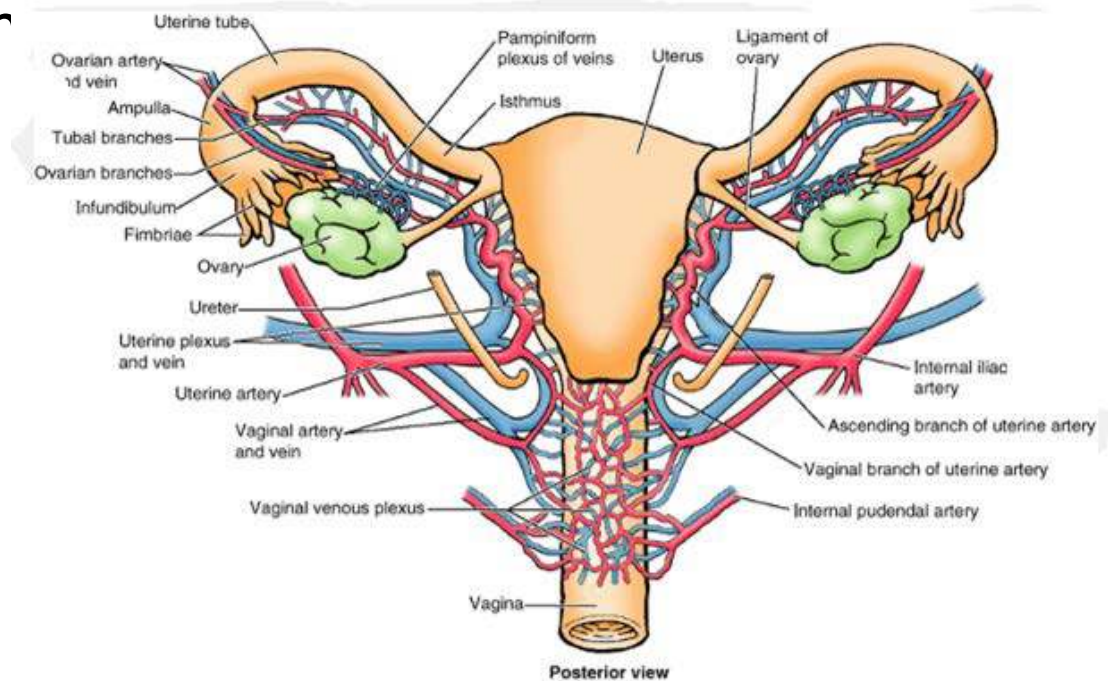
Blood supply of the vagina

Arterial supply:

- Upper 2/3 :by vaginal artery and branches of uterine artery
- Lower 1/3 : by interir pudental artery

Venous drainage:

- Rich venous plexus
- Analogous to the arterial supply

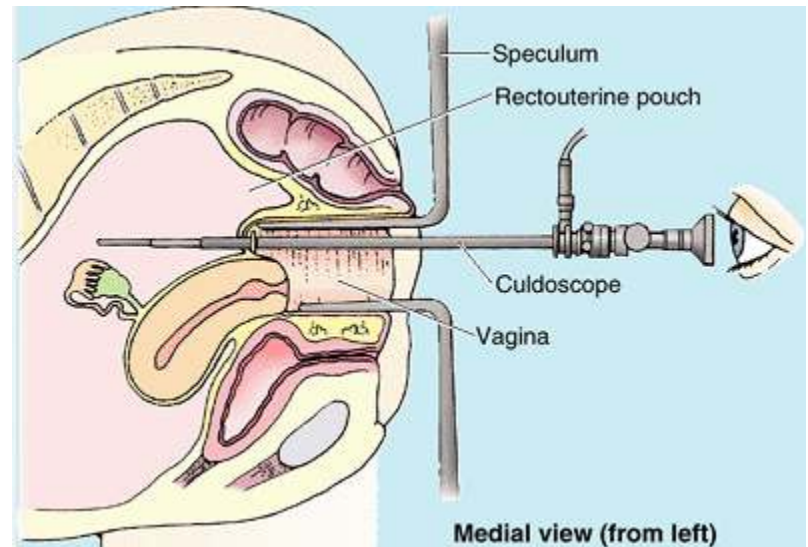


Vagina: Lymphatic drainage and Nerve supply

- Lymphatic drainage:
 - Upper 2/3 :into external and internal iliac nodes (as the cervix)
 - Lower 1/3 :into the inguinal nodes
- Nerve supply :
 - Pudendal nerve gives sensory fibers to lower vagina

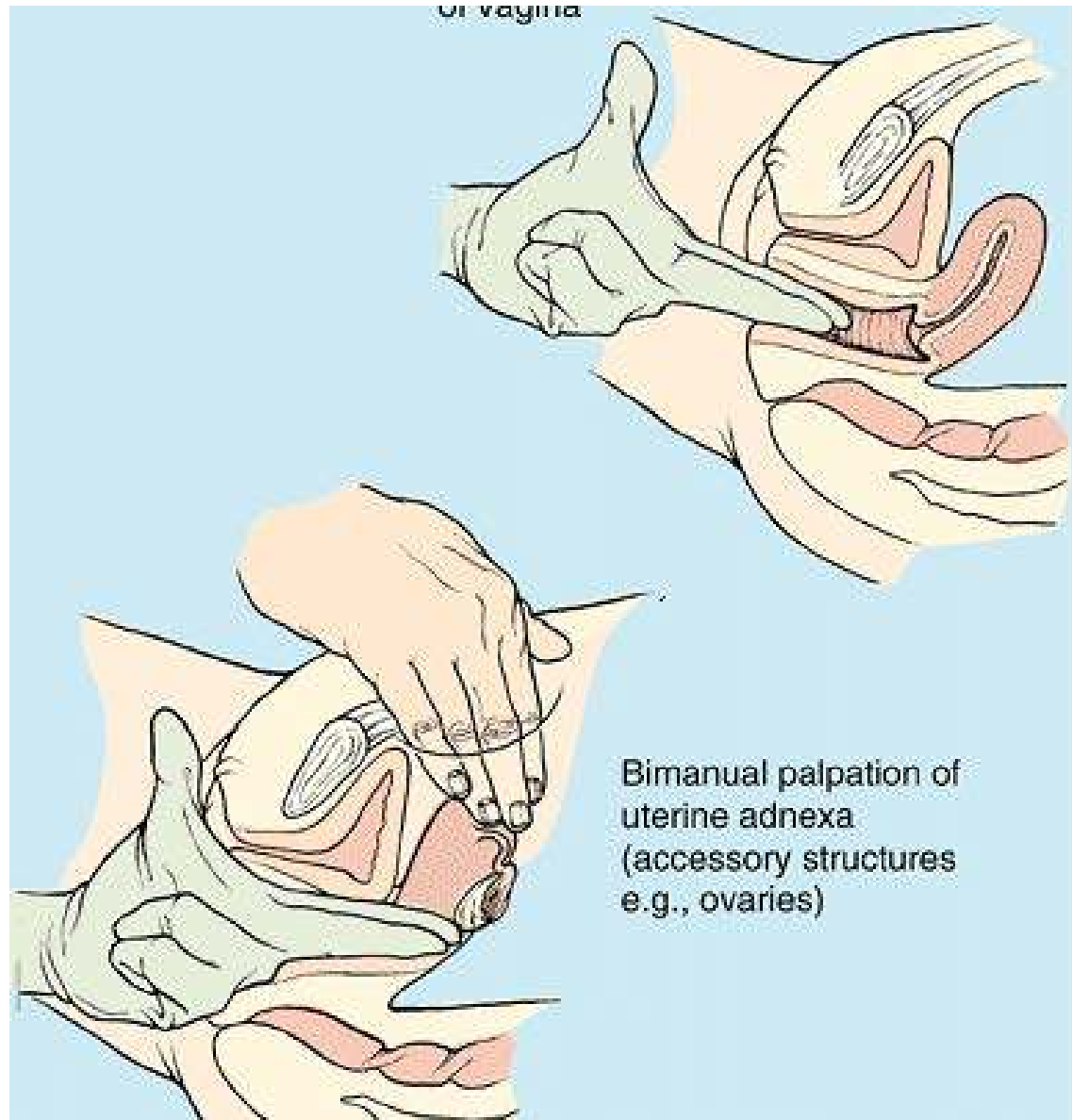
Colposcopy

- Examining the pouch of Douglas through the posterior fornix
- One can also drain collections from the pouch through this mean



Digital Vaginal Examination

Extremely important for obstetric and gynecology practice



THE MALE EXTERNAL GENITALIA

The corpora cavernosa

- A pair of cylindrically shaped erectile tissue, one on each side of the urogenital triangle
- Anchored by their proximal ends to the pubic arch (The crura)
- The distal ends are not attached to bone, and form the body of the clitoris in women and the dorsal parts of the body of the penis in men.

The corpus spongiosum

- Anchored at its base (The bulb), to the perineal membrane.
- The free proximal end forms the ventral part of the body of the penis and expands over the end of the body of the penis to form the glans penis.
- Homogonous to the bulb of the vestibule in the female
- Encloses the spongy urethra

Male External Genitalia

- The include the
 - i. scrotum
 - ii. Penis
 - iii. Urethra

The Penis

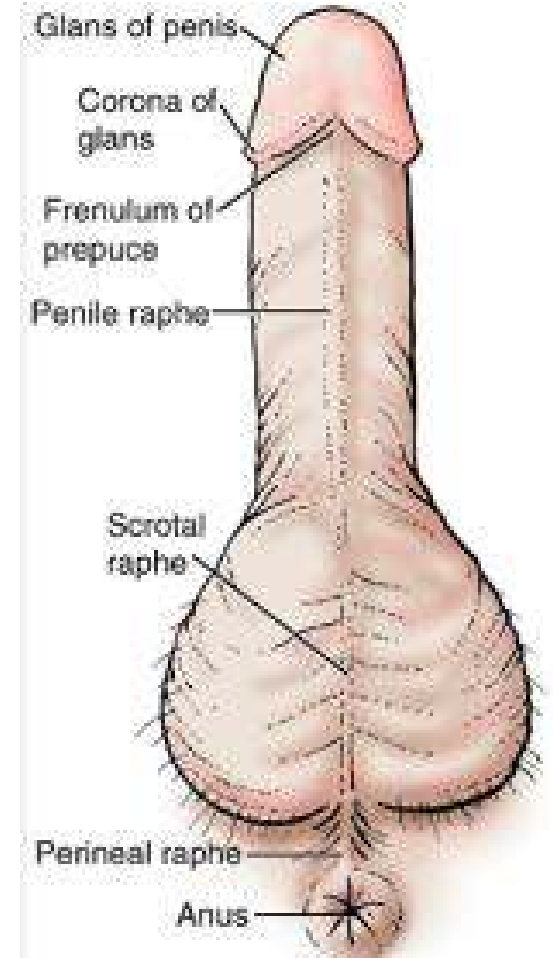
- This is the male copulatory organ
- Contains the urethra,
- Provides the common outlet for urine and semen

The Penis

- The penis consists of:
 - i. The root
 - ii. The body
 - iii. The glans.



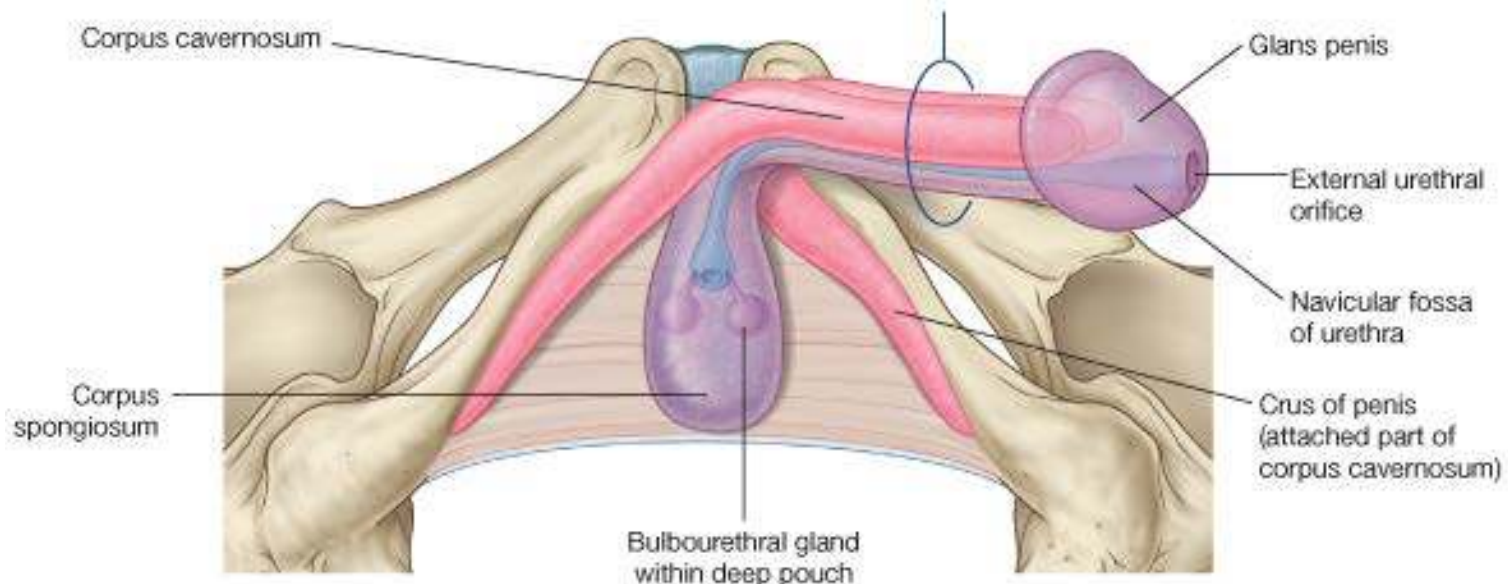
Dorsal surface



Ventral surface

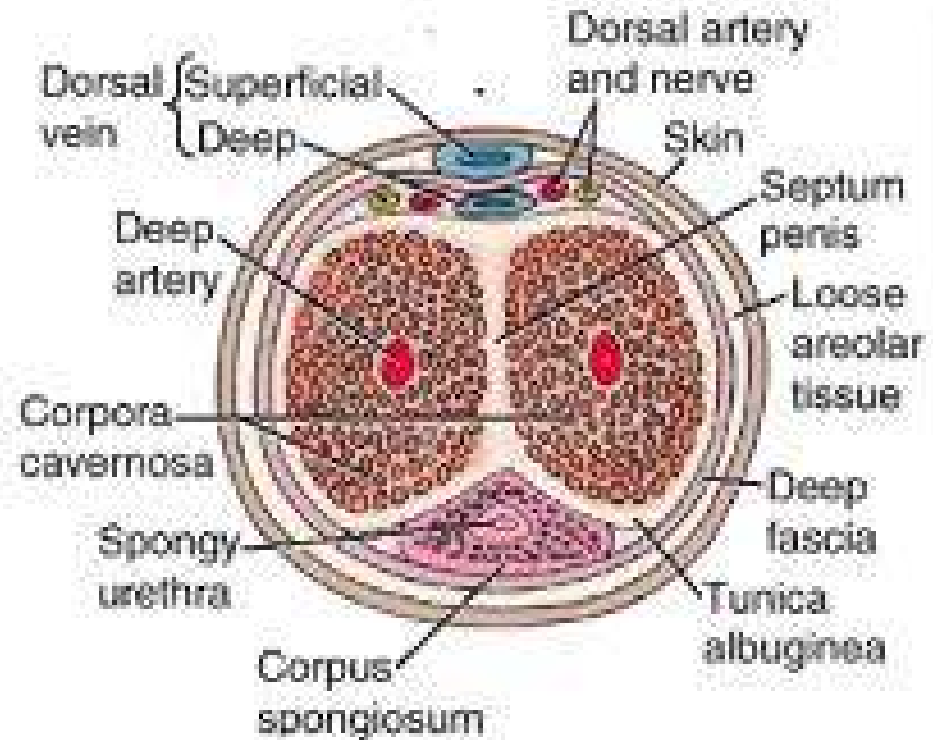
The root of penis

- Consists of:
 - i. The two crura, which are proximal parts of the corpora cavernosa attached to the pubic arch
 - ii. Bulb of penis, which is the proximal part of the corpus spongiosum anchored to the perineal membrane



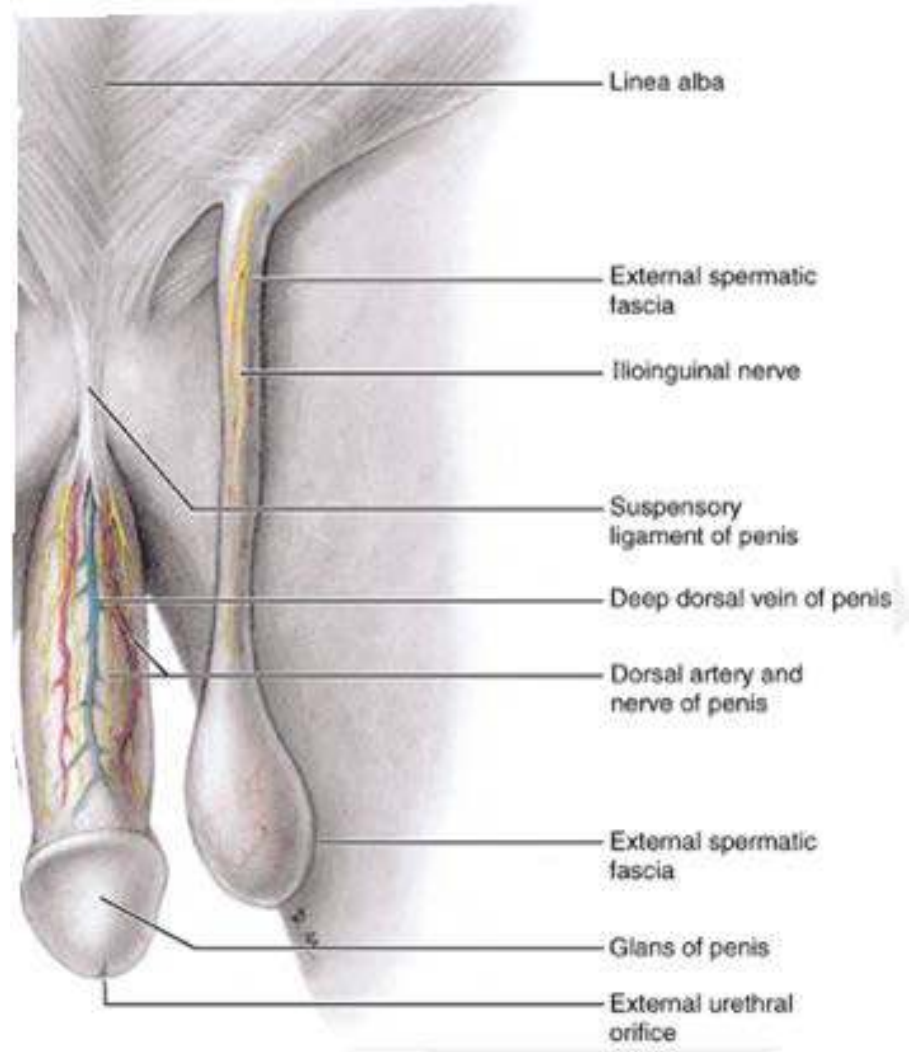
The body of the penis

- It is composed of three cylindrical bodies of erectile cavernous tissue:
 - The paired corpora cavernosa dorsally
 - The single corpus spongiosum ventrally



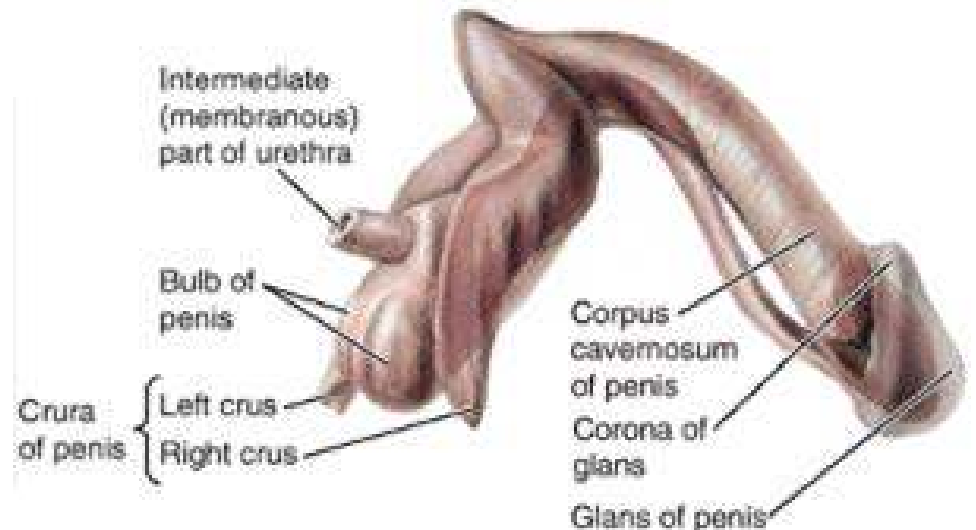
The body of the penis

- Body of penis is supported by two ligaments:
- The suspensory ligament of penis (attached superiorly to the pubic symphysis)
- The fundiform ligament which is more superficial and is attached above to the linea alba abdominal wall and splits below into two bands that pass on each side of the penis and unite inferiorly.



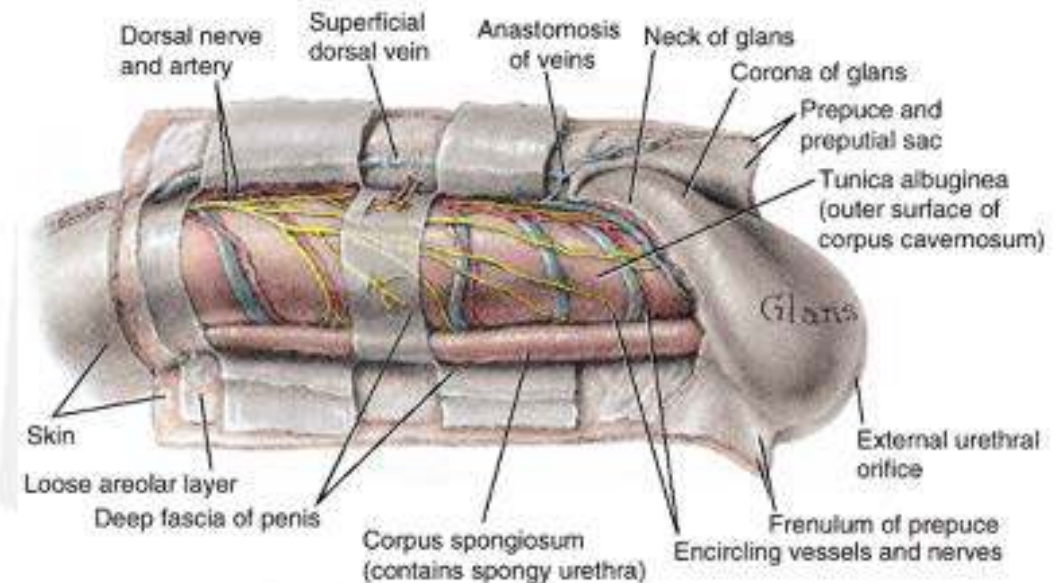
The Glans Penis

- Formed by the expansion of the corpus spongiosum distally to cover the distal ends of the corpora cavernosa



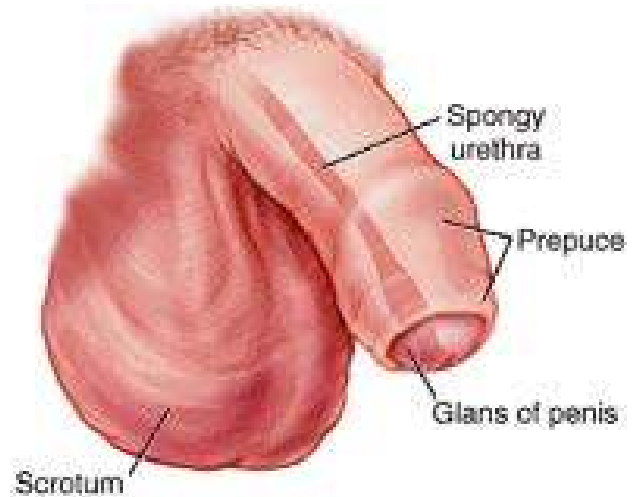
The Glans Penis

- The corona of the glans is the margin of the glans which projects beyond the ends of the corpora cavernosa to form
- The neck of the glans separates the glans from the body of the penis.
- The slit-like opening of the spongy urethra, the external urethral orifice (meatus), is near the tip of the glans.



The prepuce of the glans

- This is the prolongation of the skin beyond the neck of the glans
- Made up of double layer of skin
- Covers the glans penis
- Removed during circumcision
- The frenulum of the prepuce is a median fold that passes from the deep layer of the prepuce to the urethral surface of the glans



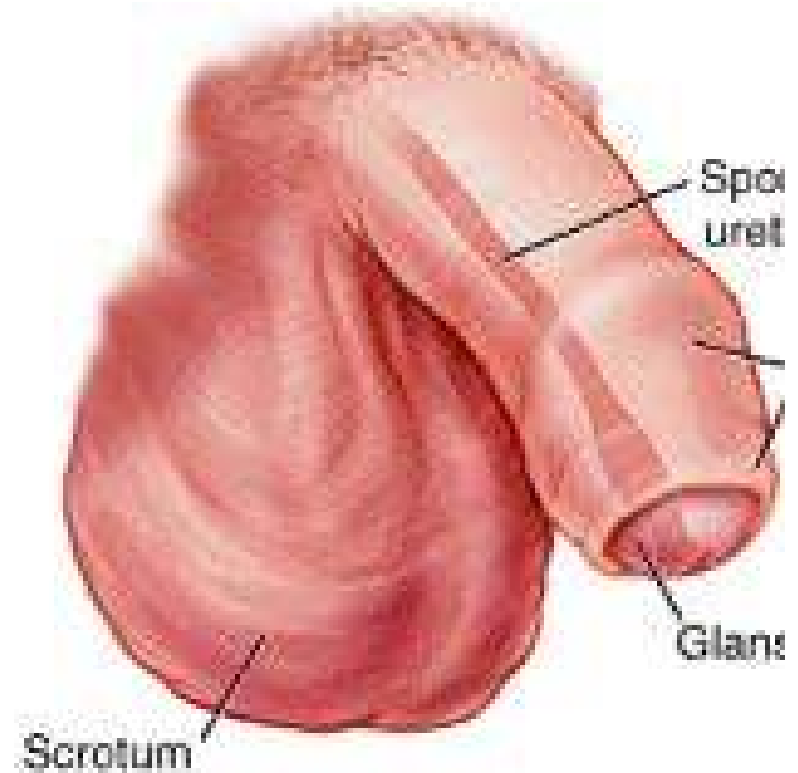
Erection

During an erection

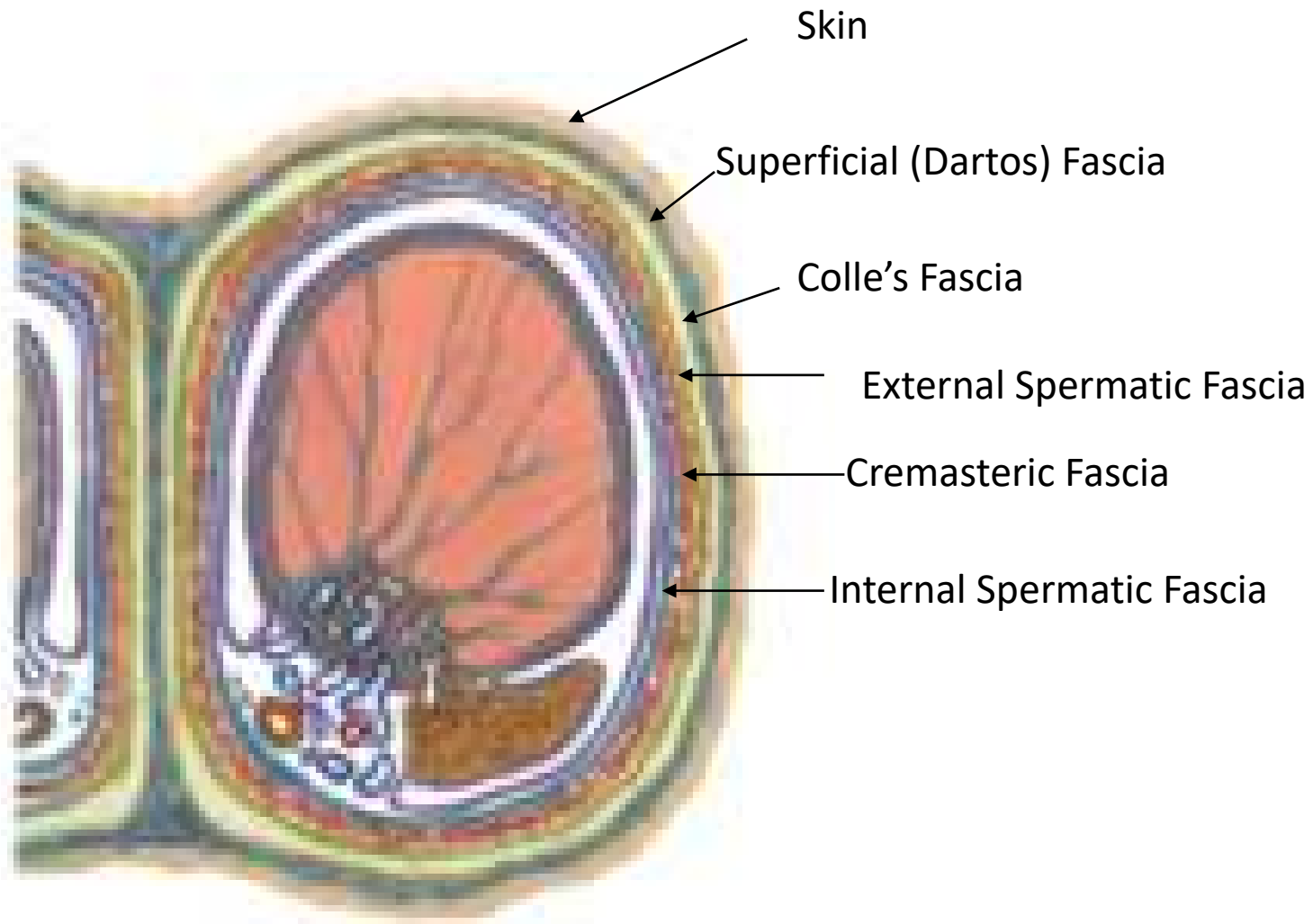
- a) The arteries supplying the corpus cavernosum and the corpus spongiosum dilate
 - b) The bulbospongiosus and ischiocavernosus muscles compress veins draining the corpora cavernosa, impeding venous blood return
 - c) the corpus cavernosum and the corpus spongiosum fill with blood causing the penis to become turgid/erect.
- This is mediated by the parasympathetic fibres from pelvic splanchnic nerves from spinal cord levels of S2 to S4

The Scrotum

- This is a pouch of skin that holds the testes.
- Has a midline raphe, which is continuous with the ventral raphe of the penis.
- Internally divided into two cavities by the septum of the scrotum



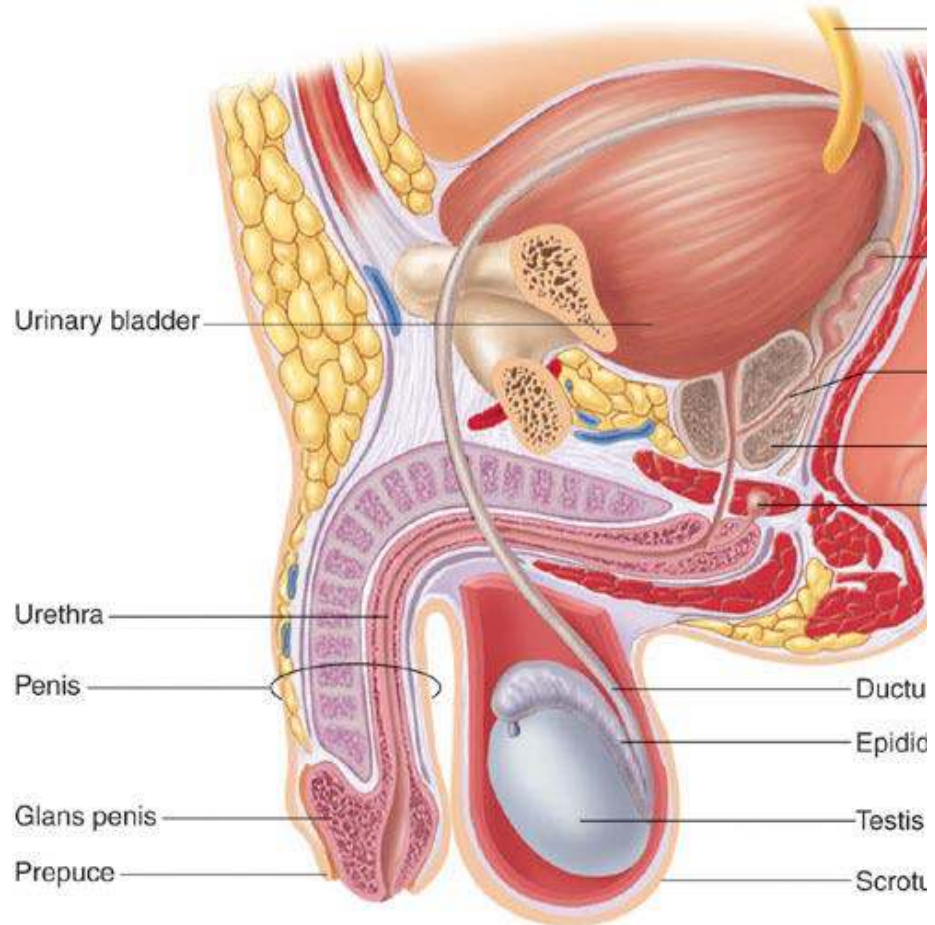
Layers of the Scrotum



The Scrotum

- Dartos muscle lies in the fascia which responds to the ambient temperature:
- Scrotal skin lengthens and shrinks to maintain sperm temperature at 3°C lower than the body temperature to aid spermatogenesis

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Arterial supply of the scrotum

- Supplied by branches of internal and external iliac arteries
- Anterior scrotal arteries, terminal branches of the external pudendal arteries (from the femoral artery), supply the anterior aspect of the scrotum
- Posterior scrotal arteries, terminal branches of the superficial perineal branches of the internal pudendal arteries, supply the posterior aspect.
- Also receives branches from the cremasteric arteries (branches of the inferior epigastric arteries).

Venous and lymphatic drainage

- Veins bear the same name to the arteries, but drain into the external pudendal vein, which drains into the femoral vein
- The lymphatic drainage is into the superficial inguinal lymph nodes

Nerve supply

- Anteriorly by derivatives of the lumbar plexus
 - i. Anterior scrotal nerves (from the ilioinguinal nerve).
 - ii. Genital branch of the genitofemoral nerve
- Posteriorly by derivatives of the sacral plexus
 - i. Posterior scrotal nerves (from the superficial perineal branches of the pudendal nerve)
 - ii. perineal branch of the posterior femoral cutaneous nerve