

UROGENITAL SYSTEM

External Genitalia (Male &Female)

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External male genital organ

Penis

✓ This is the male copulatory organ. It is formed of two main parts.

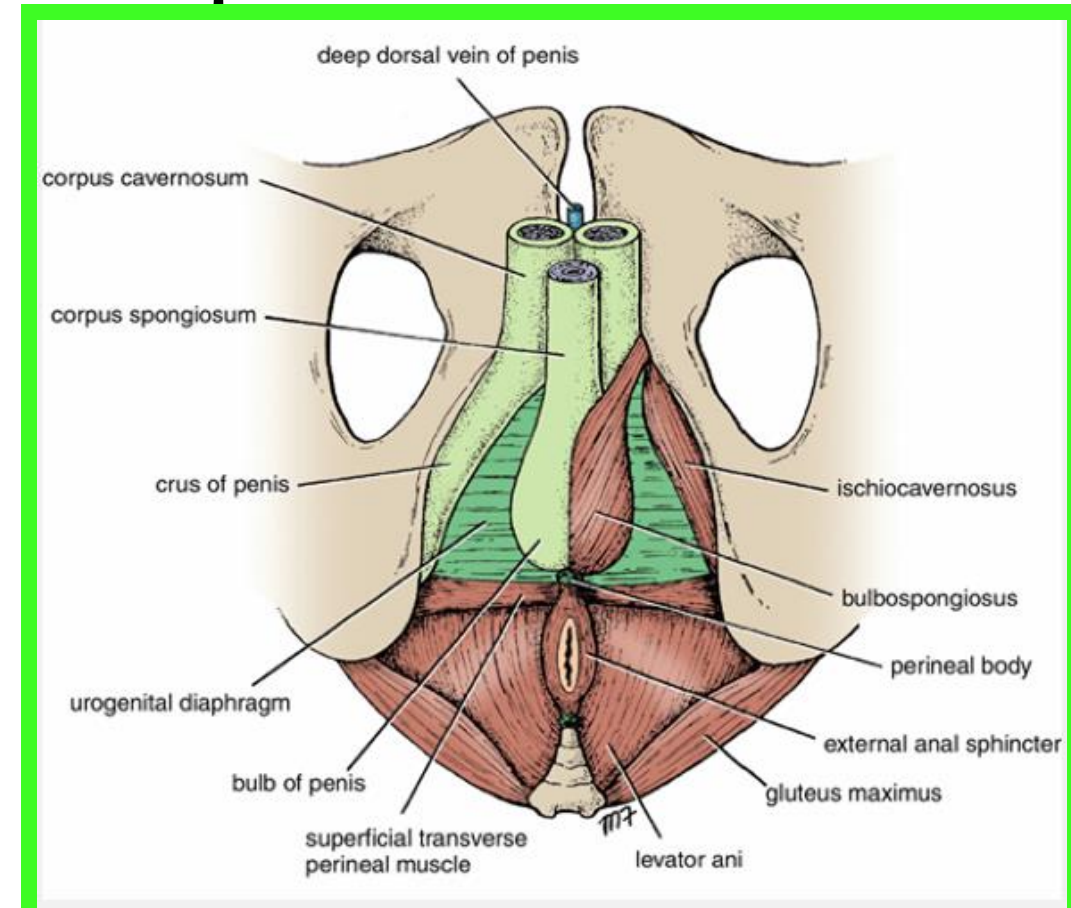
1. **Root of the penis:** lies in the superficial perineal pouch.

Is made up of three masses of **erectile tissue** called:

the bulb of the penis and
the right and left crura of the penis

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External male genital organ

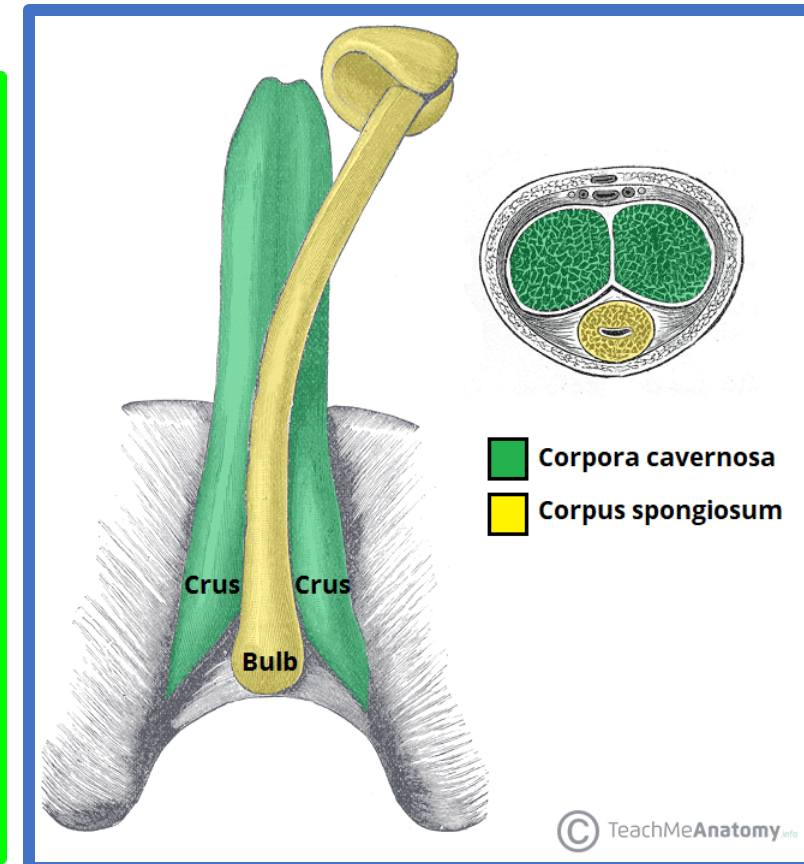
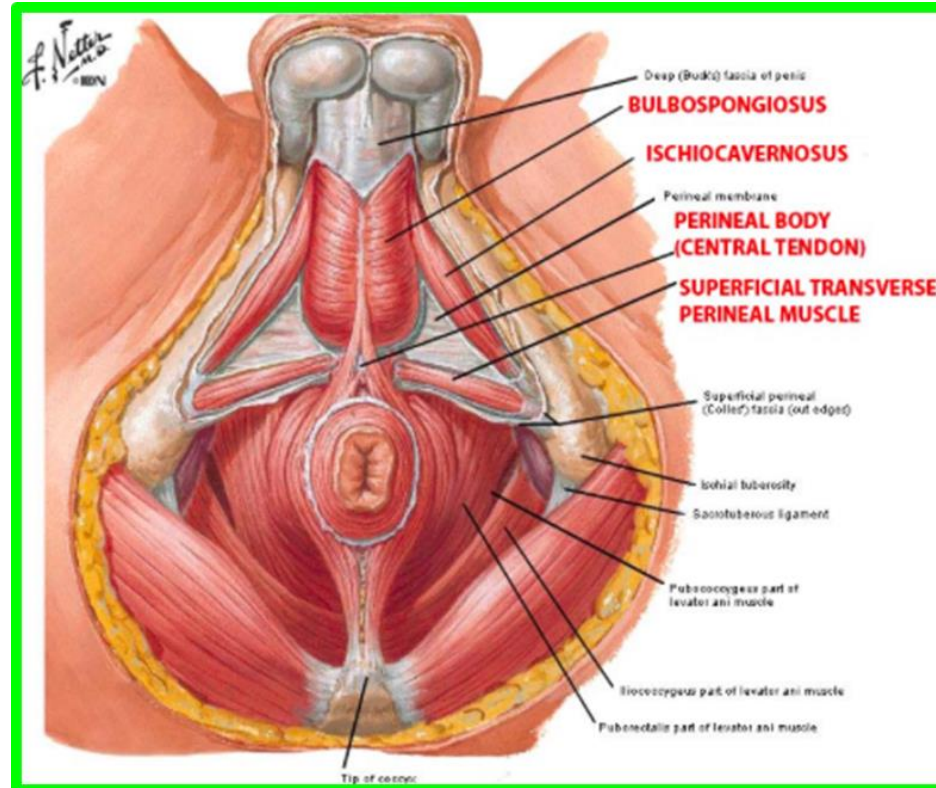
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1. Root of the Penis

- ❑ The **bulb** is situated in the midline and is attached to the undersurface of the **urogenital diaphragm**
- ❑ It is traversed by the **urethra** and is covered on its outer surface by the **bulbospongiosus muscles**

❑ The **bulb** is continued forward into the **body of the penis** and forms the **corpus spongiosum**



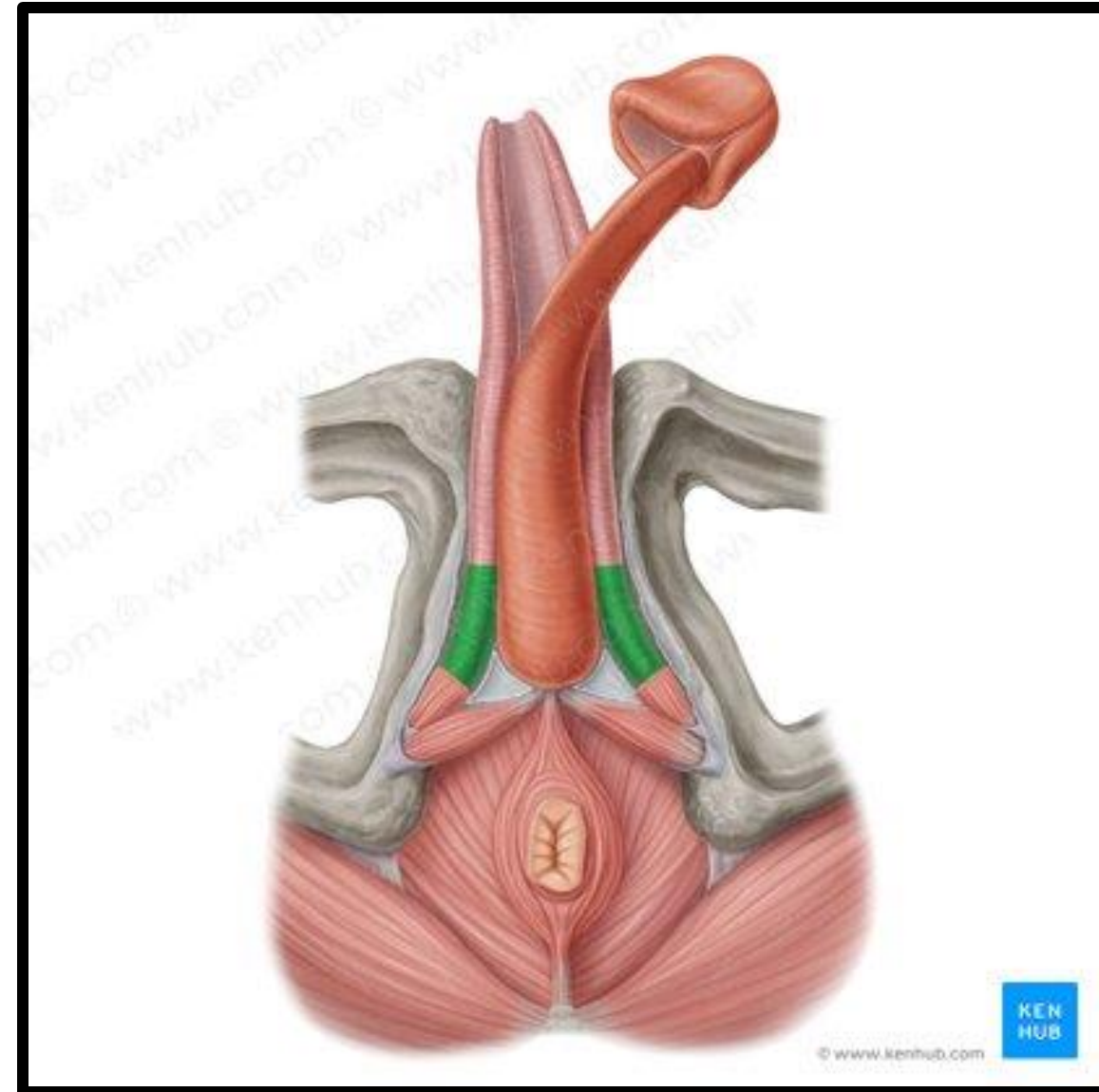
External male genital organ

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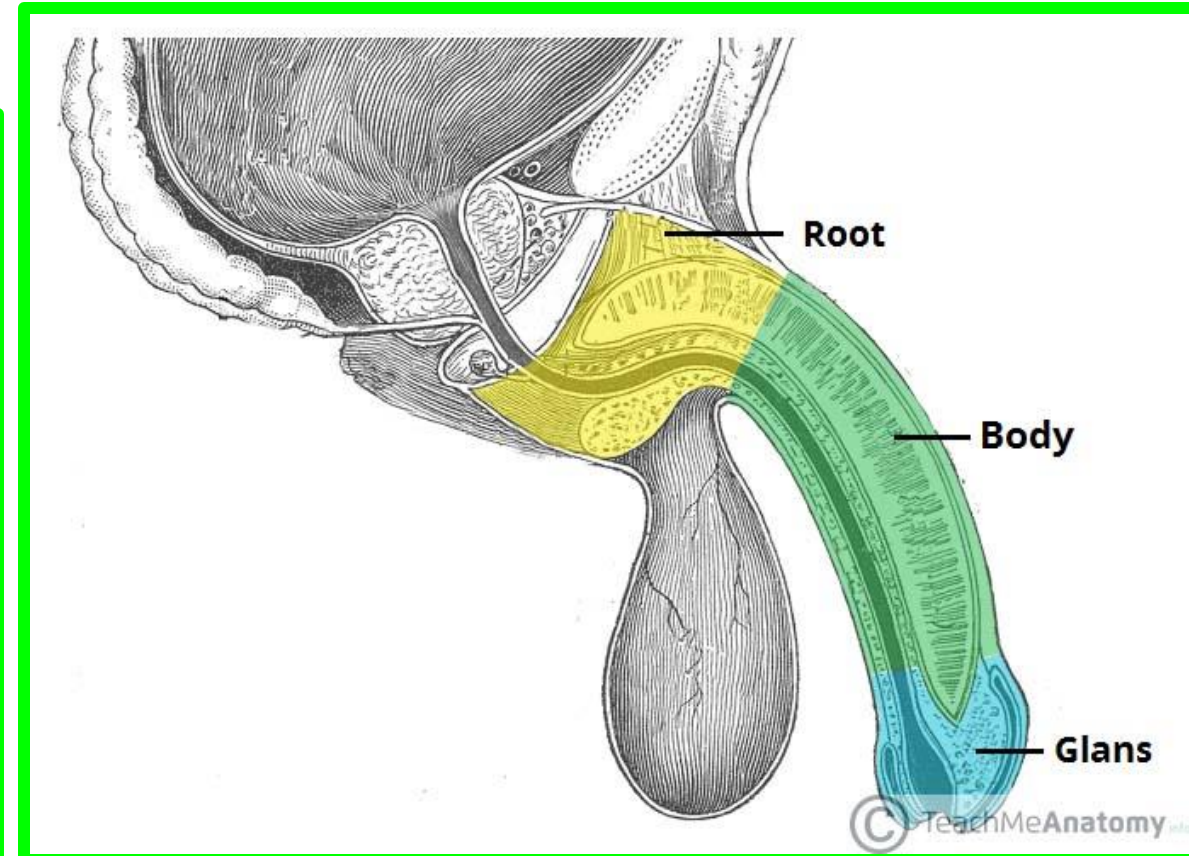
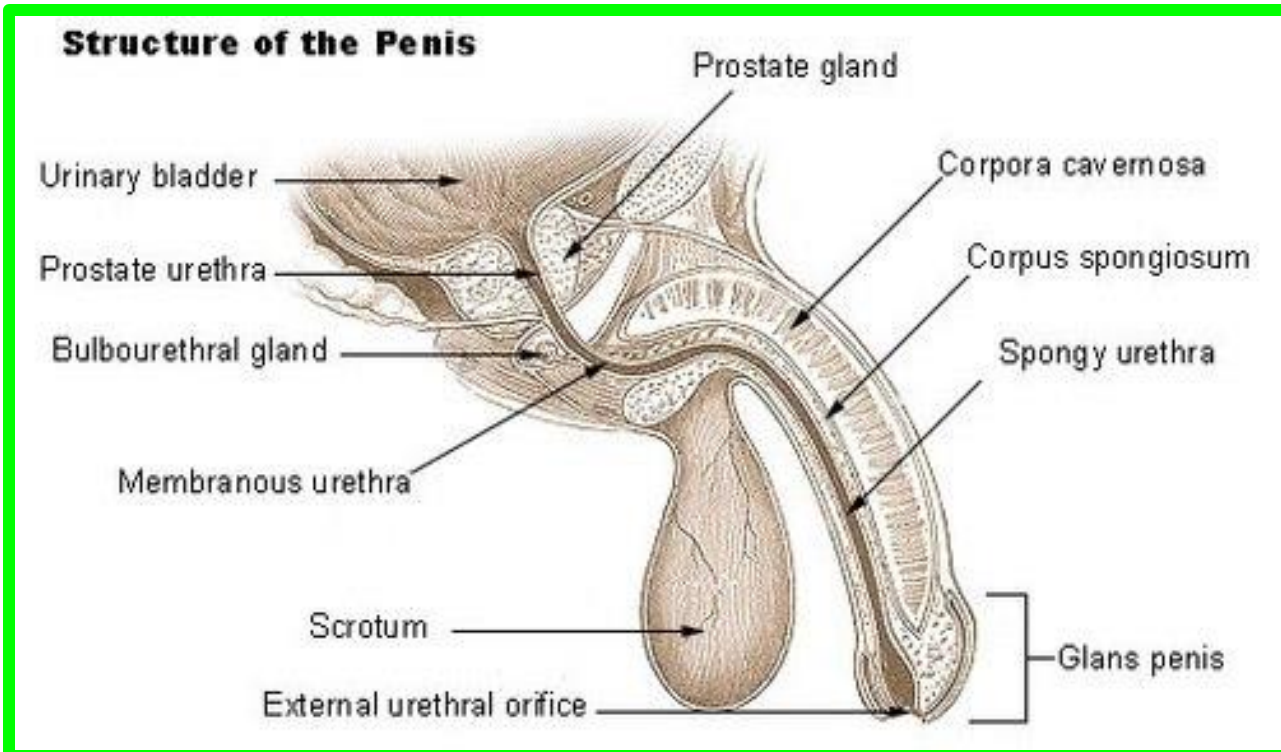
1. Root of the Penis

- ❑ Distally, **the corpus spongiosum** expands to form the conical **glans of penis**, or head of the penis
- ❑ **Each crus** is attached to the side of the pubic arch and is covered on its outer surface by **the ischiocavernosus muscle**.
- ❑ **The two crura** converge anteriorly and come to lie side by side in the dorsal part of **the body of the penis**, forming the **corpora cavernosa**

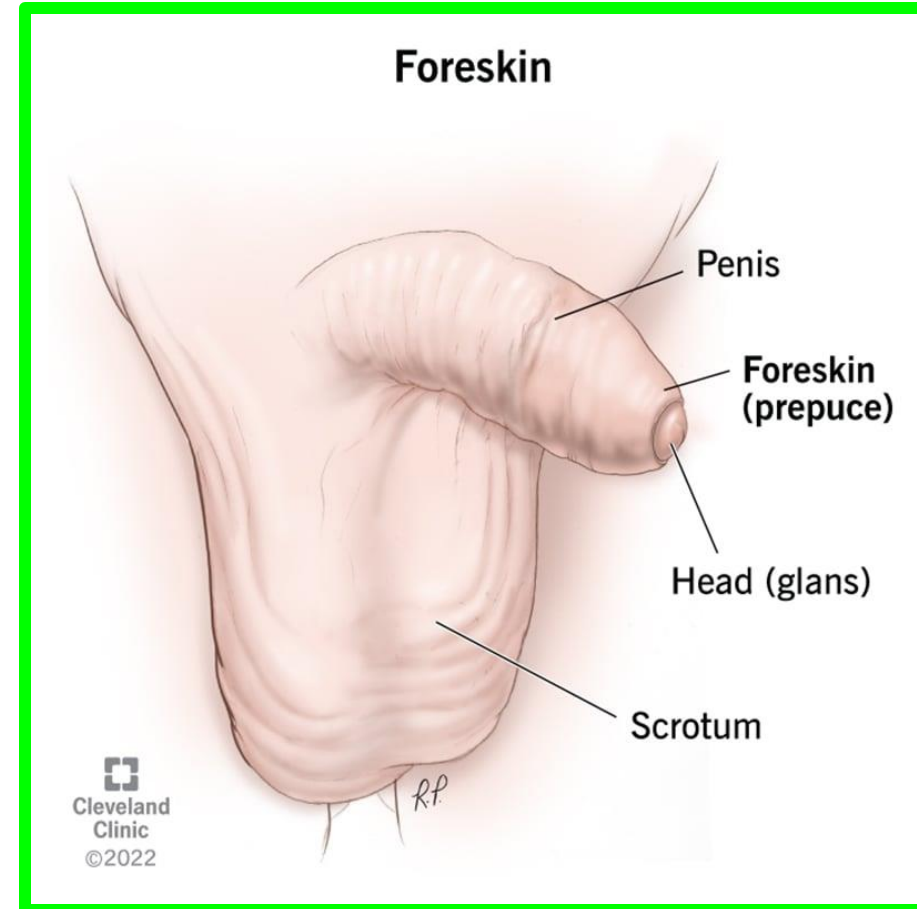
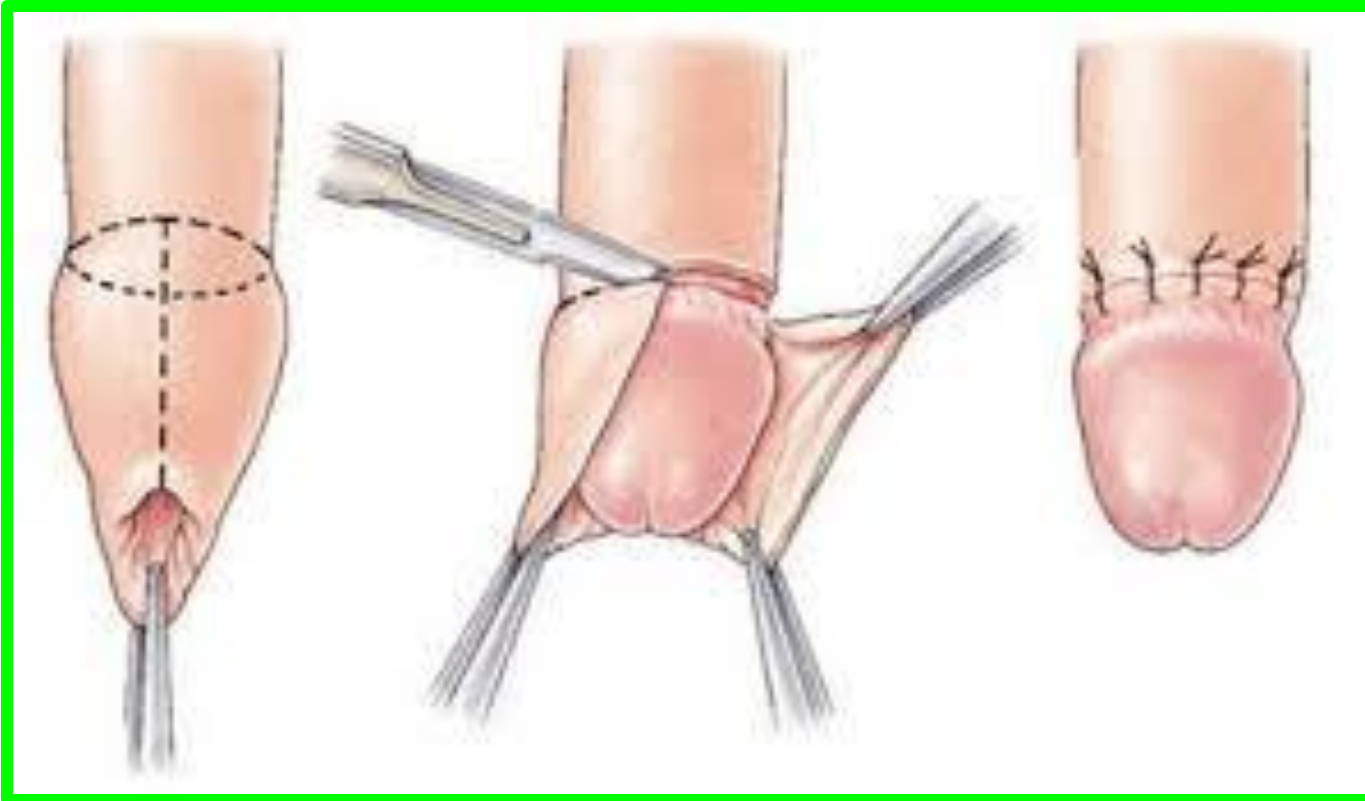


2. **Body of the penis** this is the free pendulous part.

- ❖ The end of the body is enlarged called **the glans penis**.
- ❖ The tip of the glans carries **the external urethral orifice**.
- ❖ The constriction between the body and the glans called **neck of the penis**.

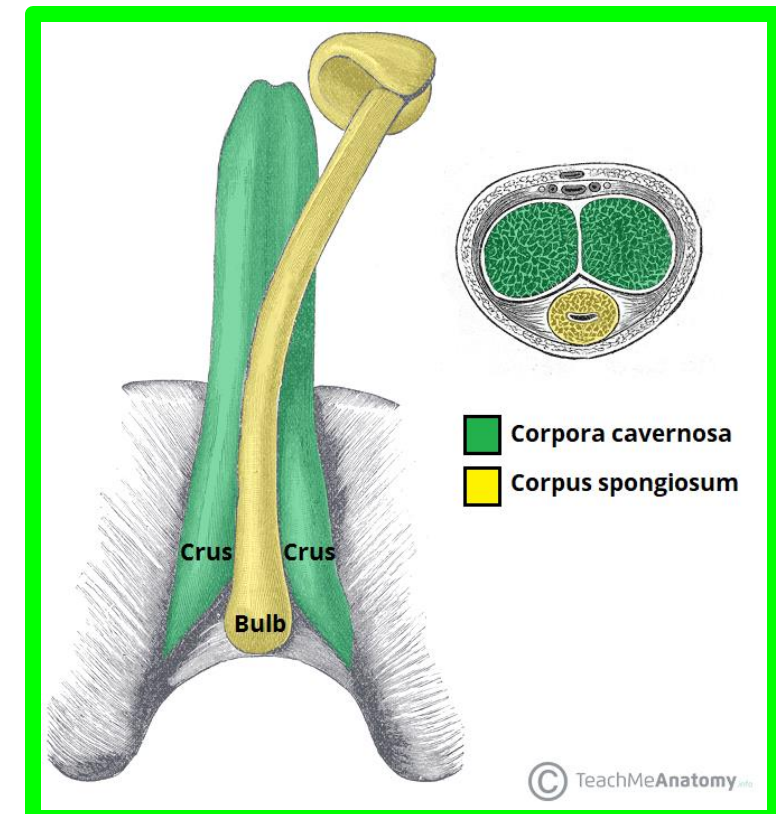
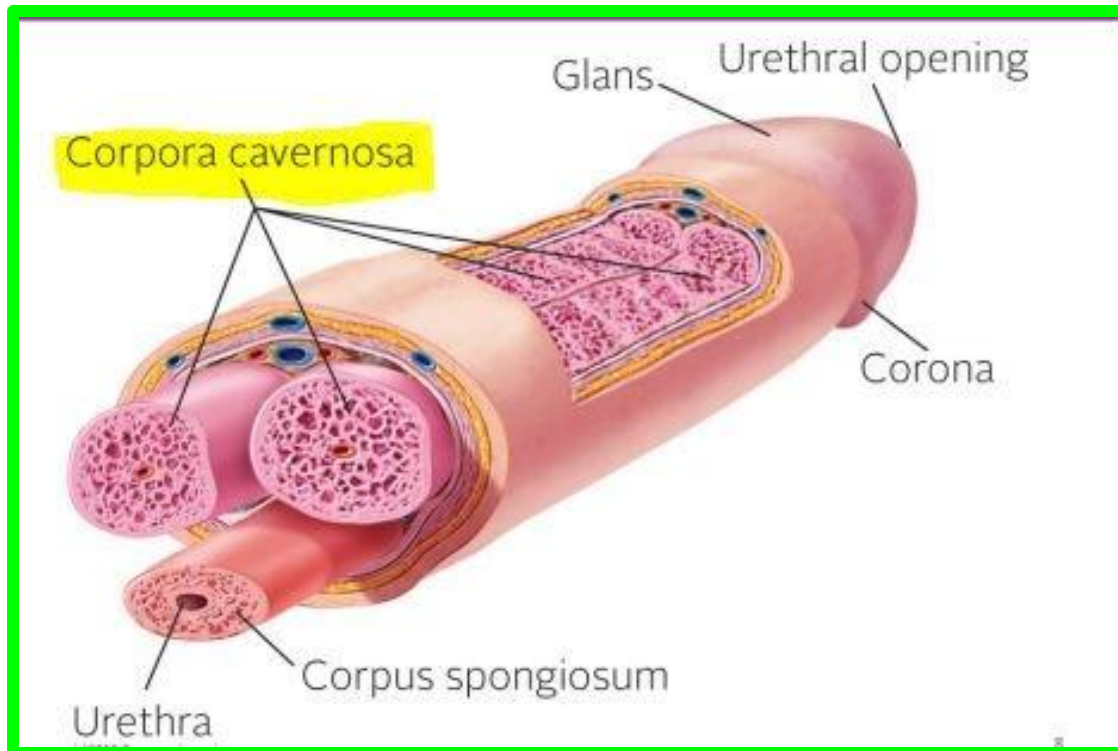


- ❖ **Prepuce (Foreskin)**, skin folds cover the glans penis.
- N.B; Circumcision** is the removal of the greater part of the prepuce.
- ❖ The superficial fascia of the penis is devoid of fat.



Penis

- ** Structures of the penis:** The penis is formed of three elongated bodies
- A. 2 corpora cavernosa:** each one is continuous posteriorly with **the crus**.
 - ✓ The **deep artery of the penis** runs in the center of the corpus cavernosum.
 - B. One corpus spongiosum:** is continuous posteriorly with **the bulb**.
 - ✓ It is traversed by **the penile (spongy) urethra**.



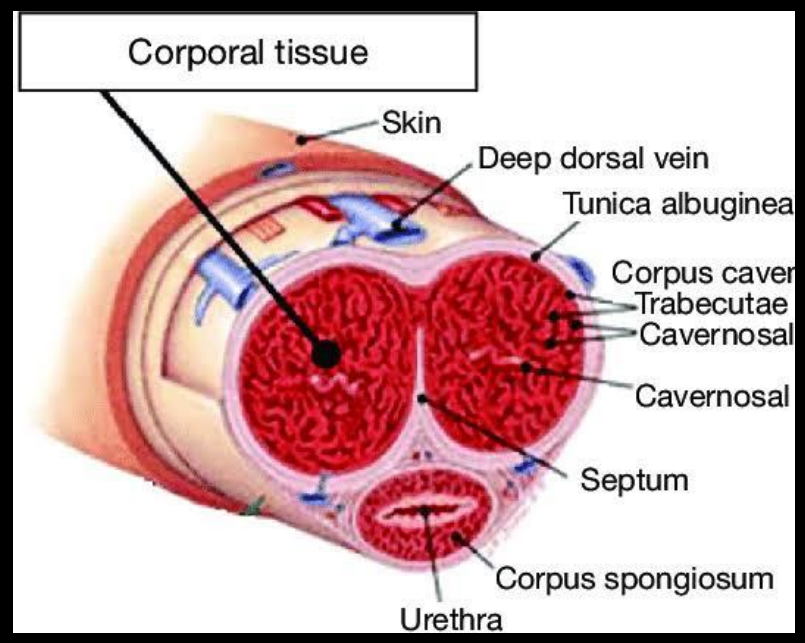
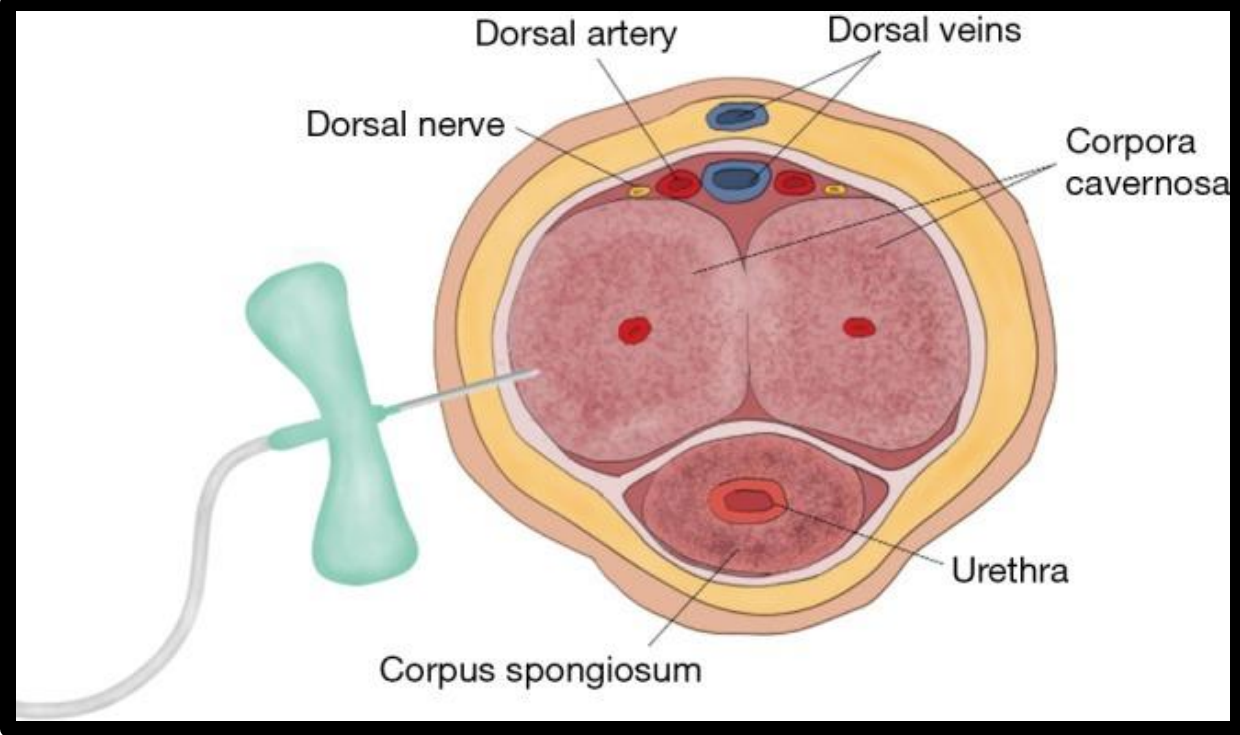
Penis

** Structures of the penis:

Body of the Penis is essentially composed of three cylinders of erectile tissue

✓ The erectile tissue is made up of two dorsally placed corpora cavernosa and

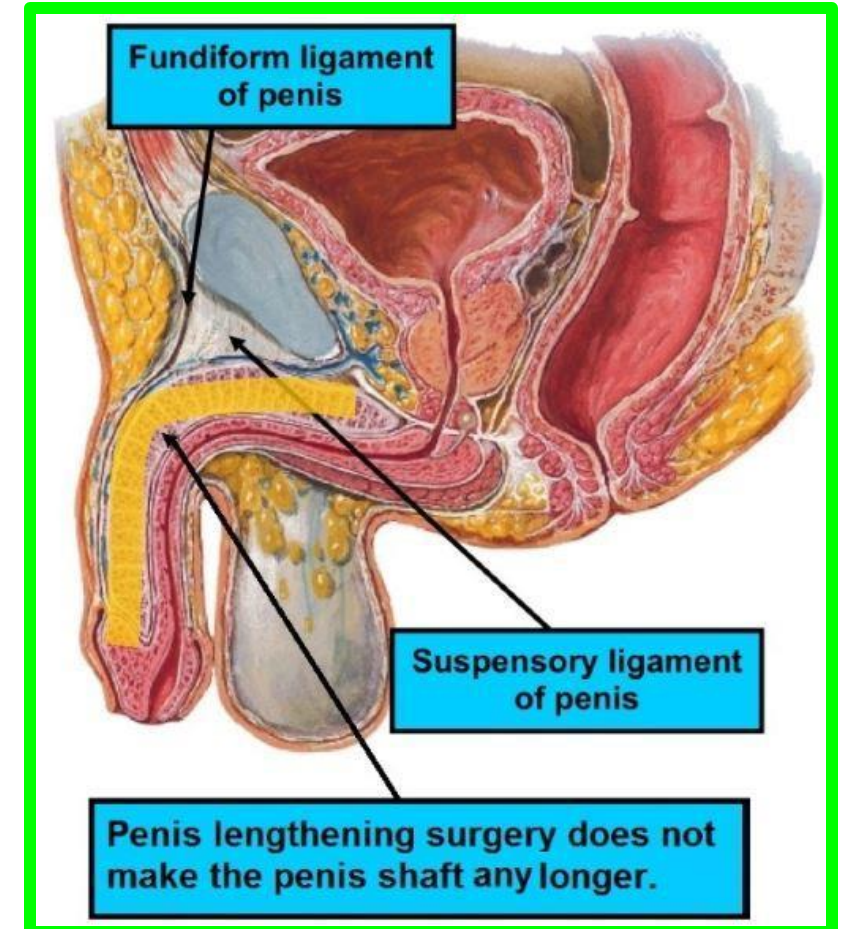
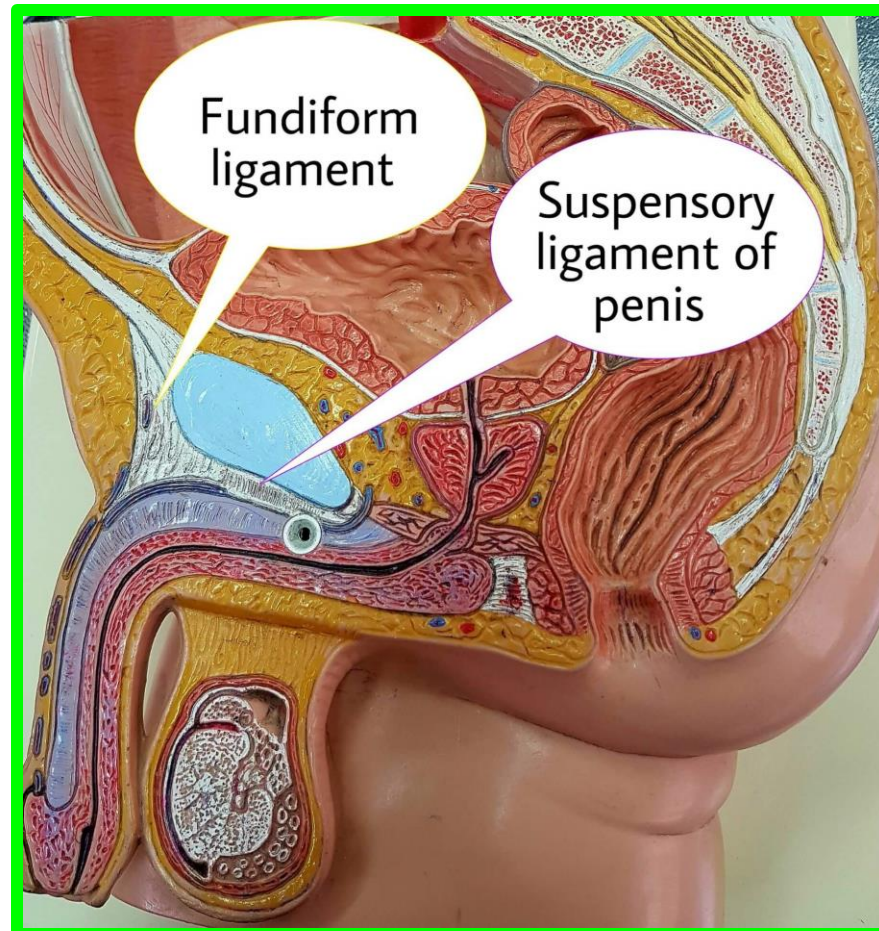
✓ A single corpus spongiosum applied to their ventral surface



Penis

** Ligaments of penis:

1. **Fundiform ligament** arises from the lower part of the linea Alba.
2. **Suspensory ligament** arises from the symphysis pubis.



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Penis

** Vessels and nerves of the penis

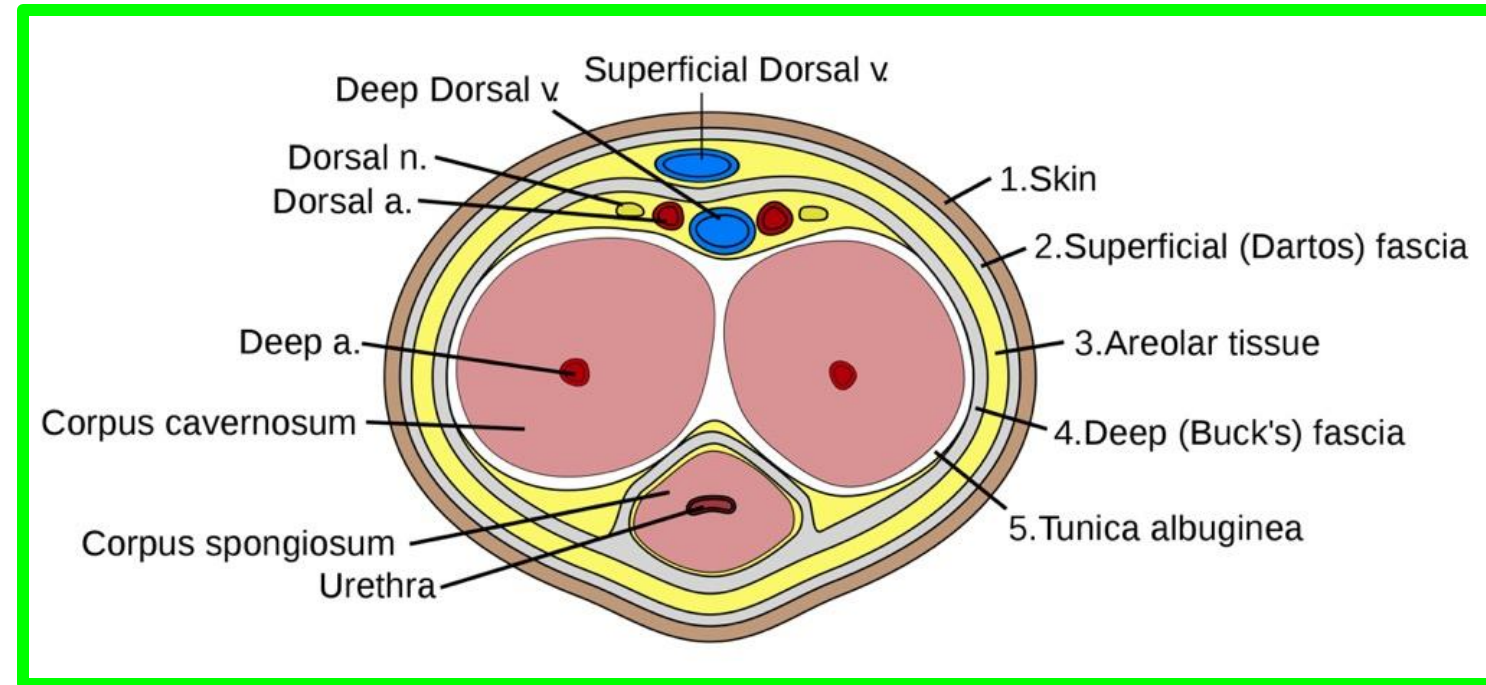
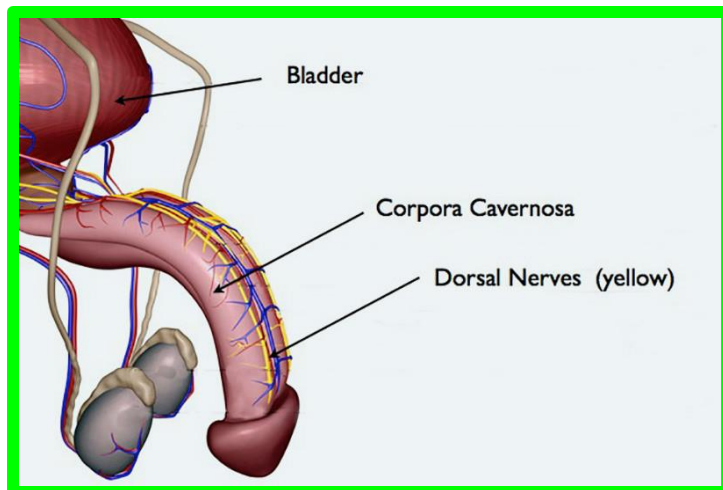
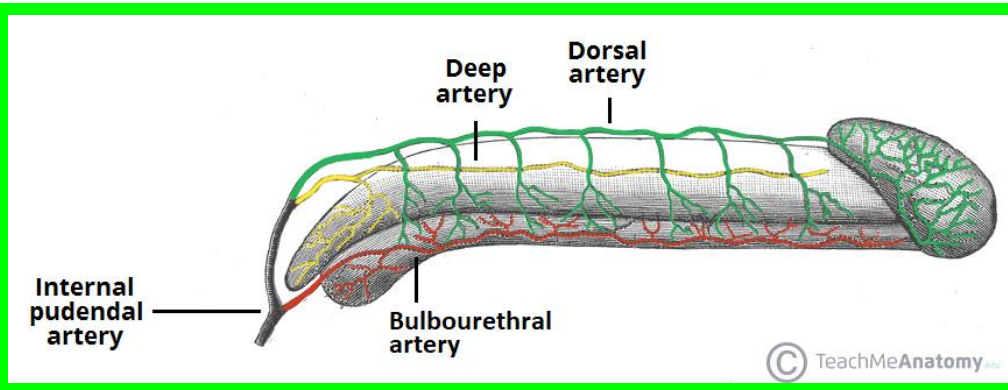
1. Deep artery of the penis.

3. Urethral artery.

4. Dorsal veins of the penis.

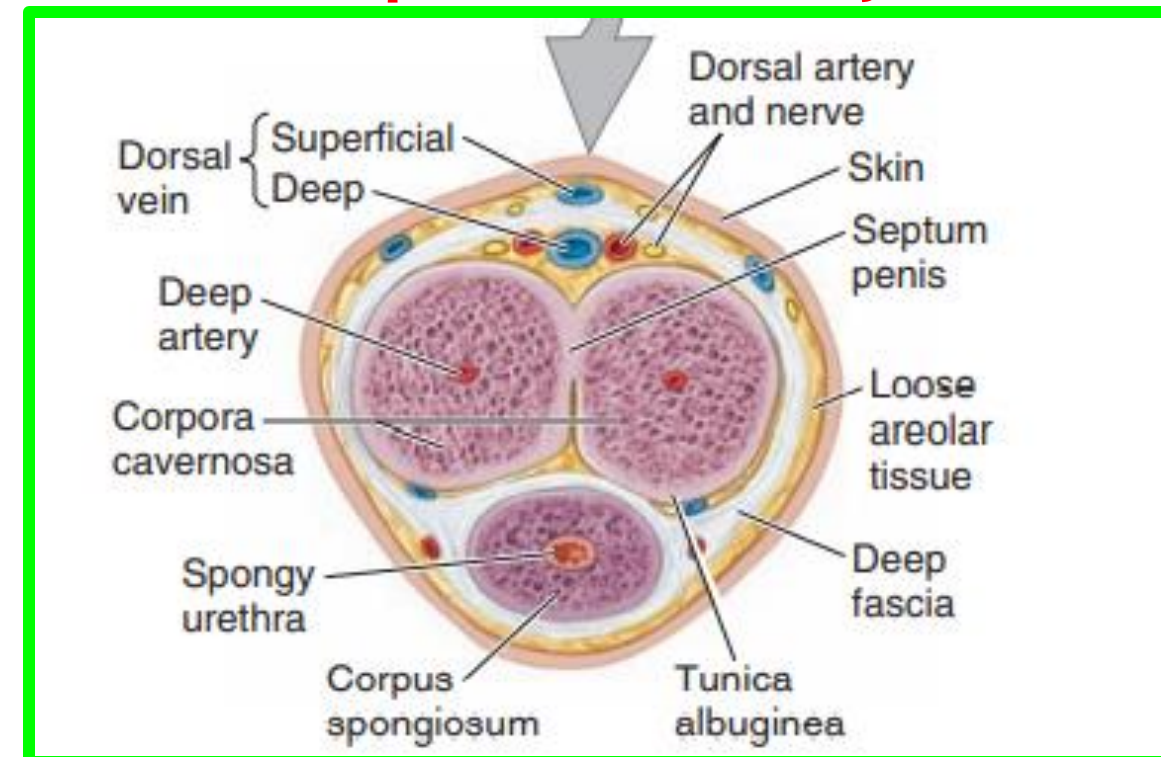
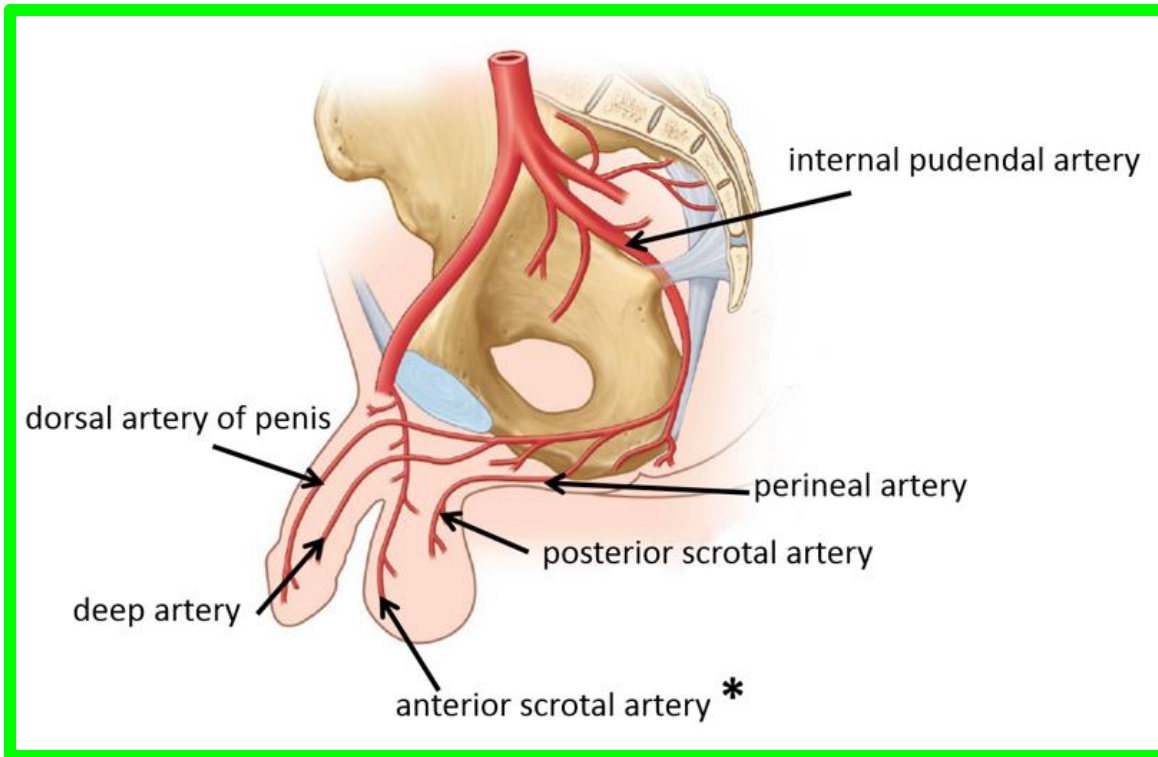
2. Dorsal artery of the penis.

5. Dorsal nerves of the penis.



The corpora cavernosa are supplied by the **deep arteries of the penis**
The corpus spongiosum is supplied by the **artery of the bulb** and **dorsal artery of the penis**.

□ All the above arteries are branches of the **internal pudendal artery**.



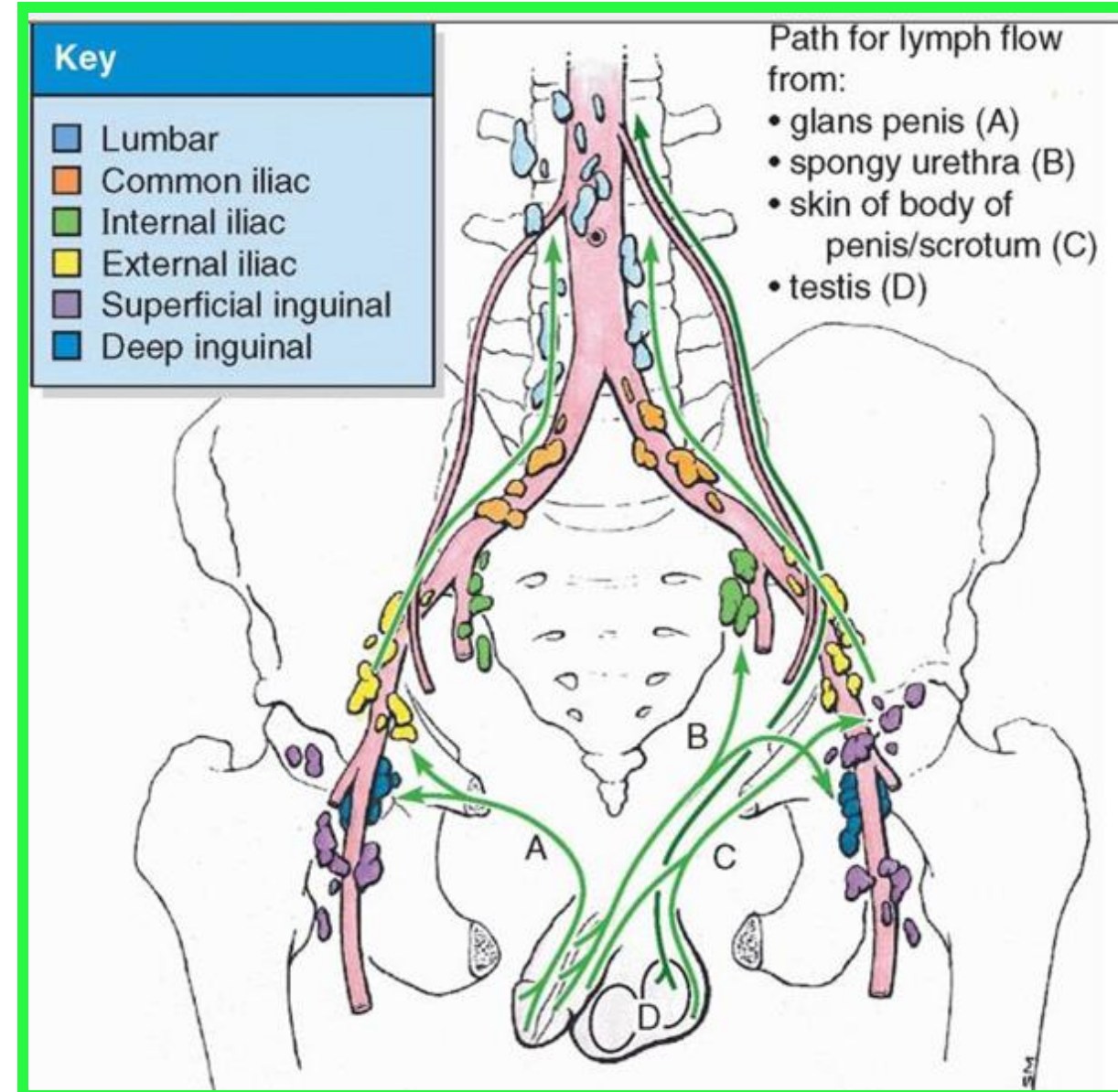
Veins::: The veins drain into the **internal pudendal veins**.

Penis

■ Lymph Drainage:

The skin of the penis is drained into **the medial group of superficial inguinal nodes.**

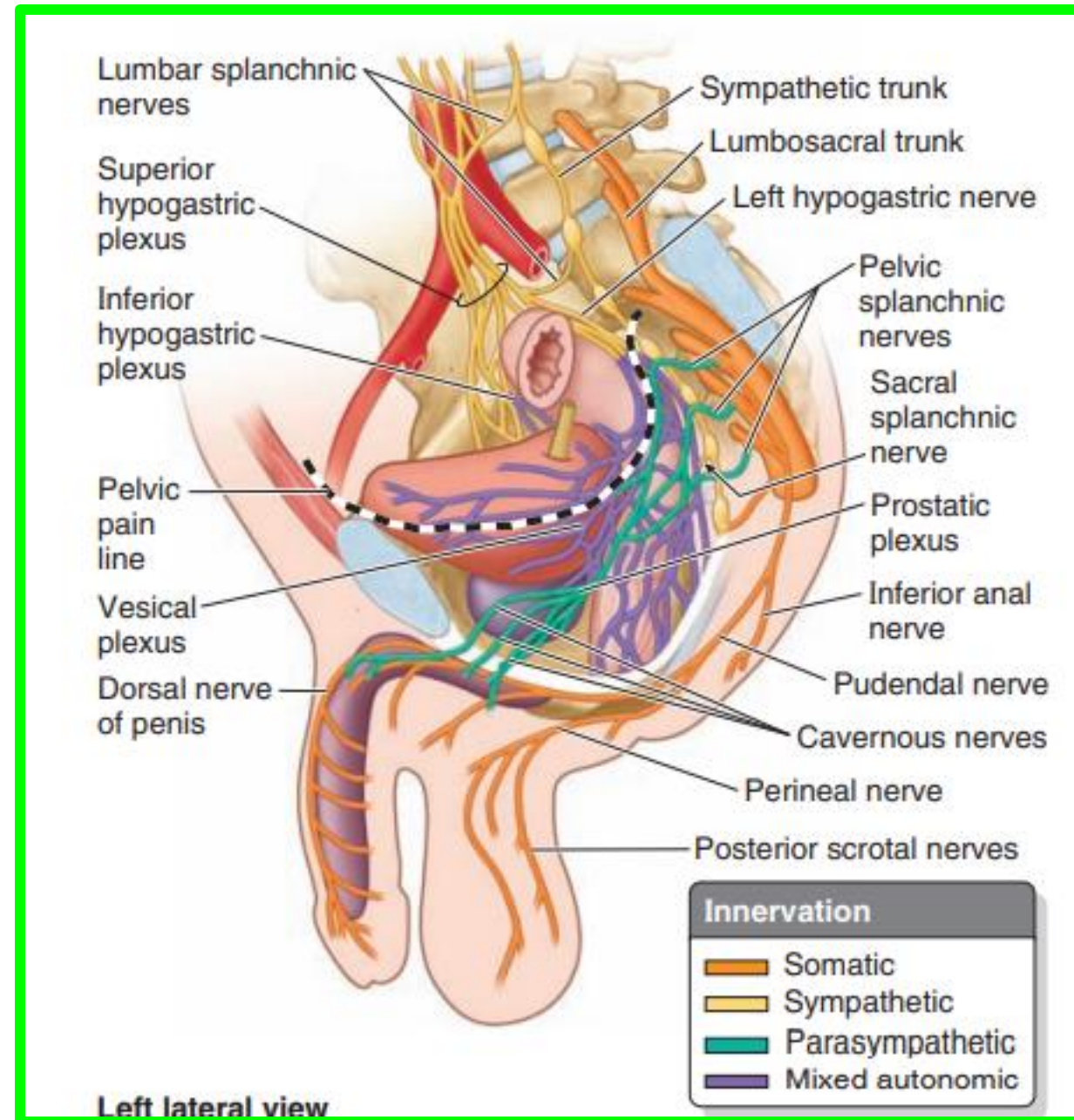
The deep structures of the penis are drained into **the internal iliac nodes.**



Penis

Sensory and sympathetic innervation is provided primarily by **the dorsal nerve of the penis**, a terminal branch of **the pudendal nerve**, which arises in **the pudendal canal** and passes anteriorly into the deep perineal pouch.

It then runs to the dorsum of the penis, where it runs lateral to the dorsal artery



Penis

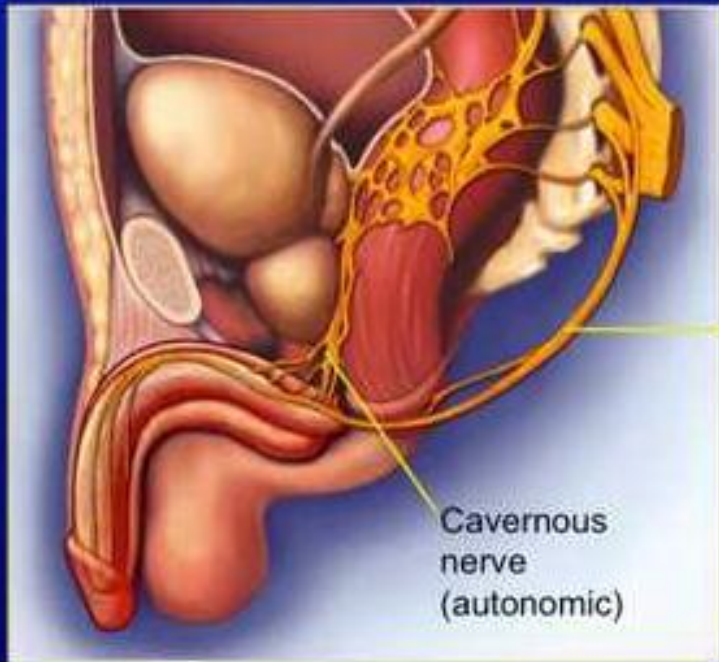
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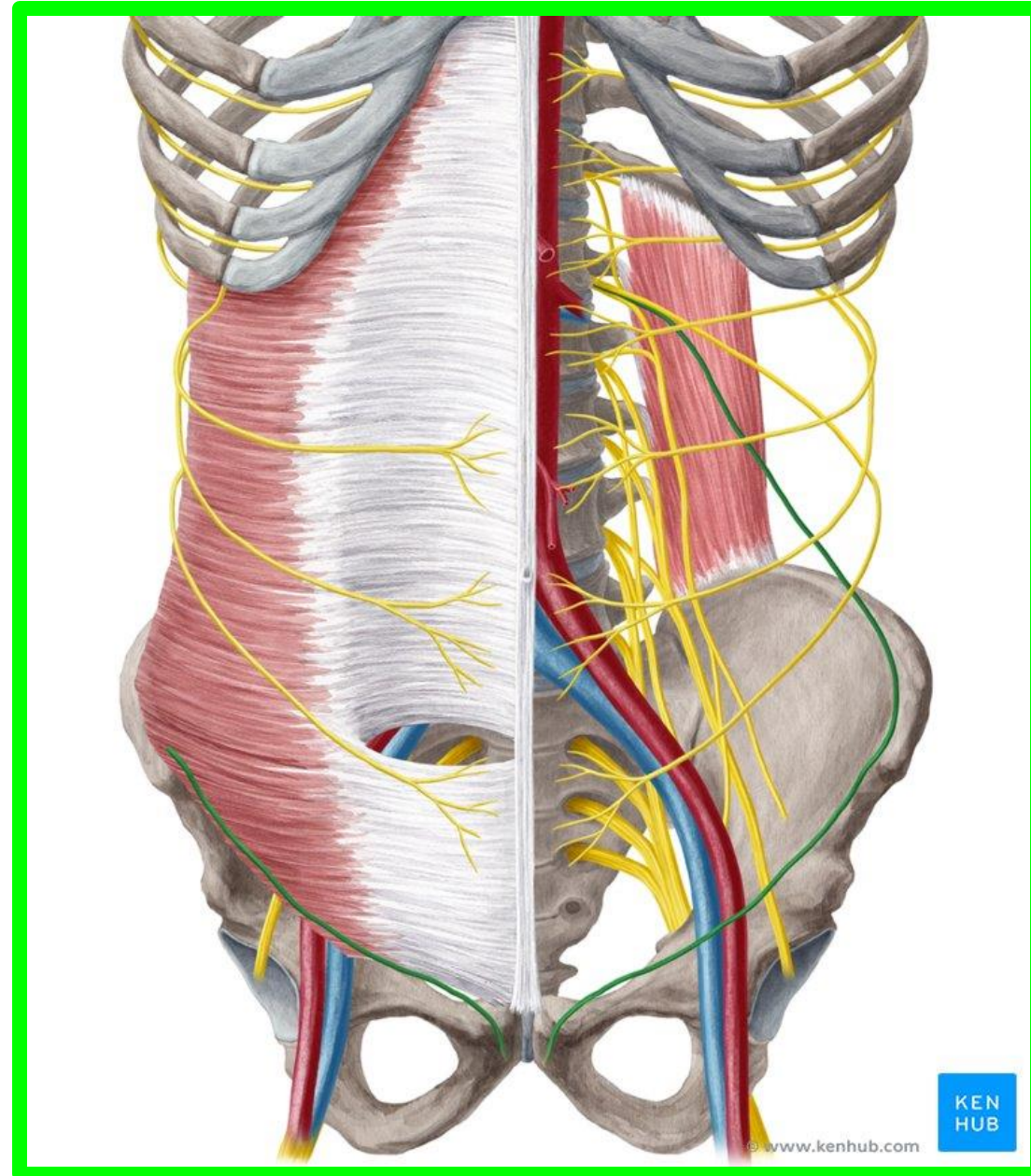
- ✓ Branches of the **ilioinguinal nerve** supply the skin at the root of the penis.

Cavernous Nerve Anatomic Distribution



Pudendal
nerve
(somatic)

Cavernous
nerve
(autonomic)



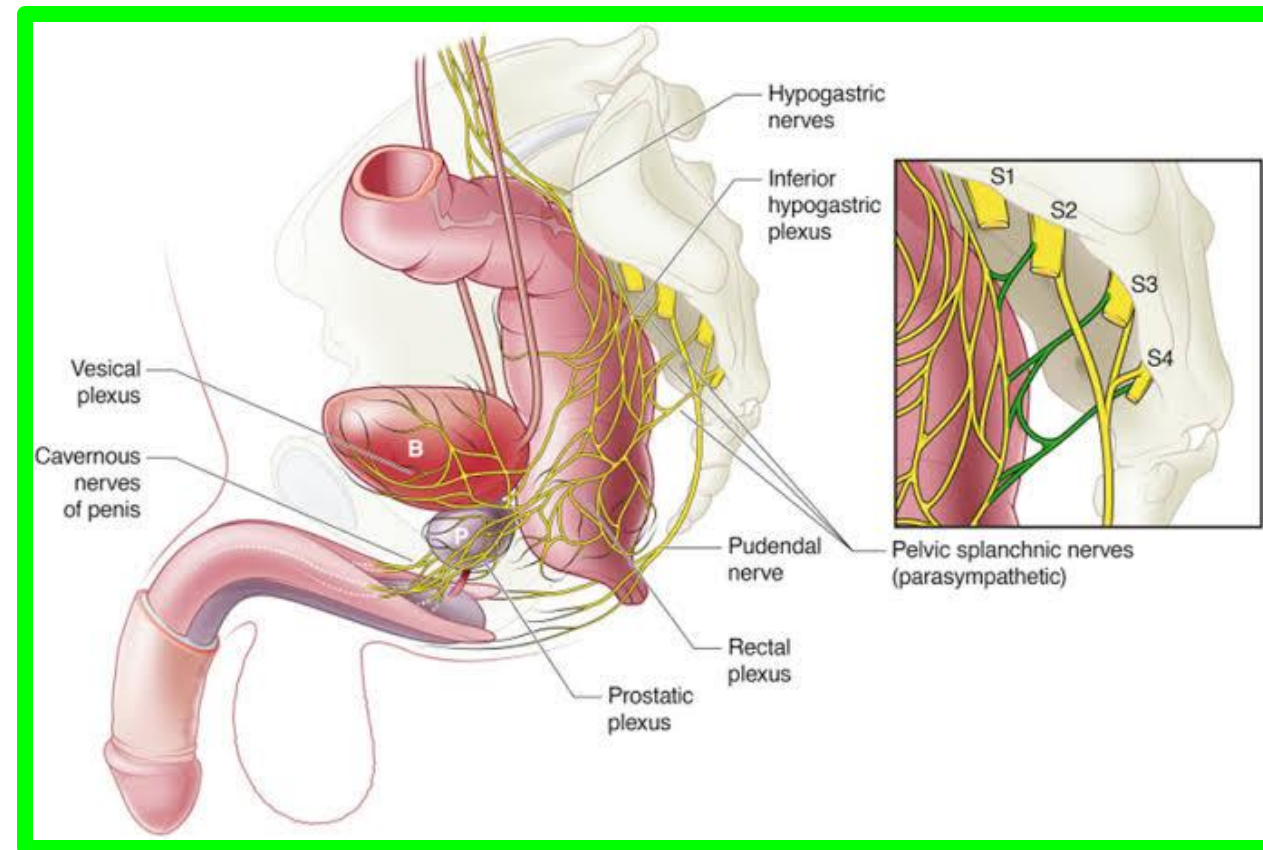
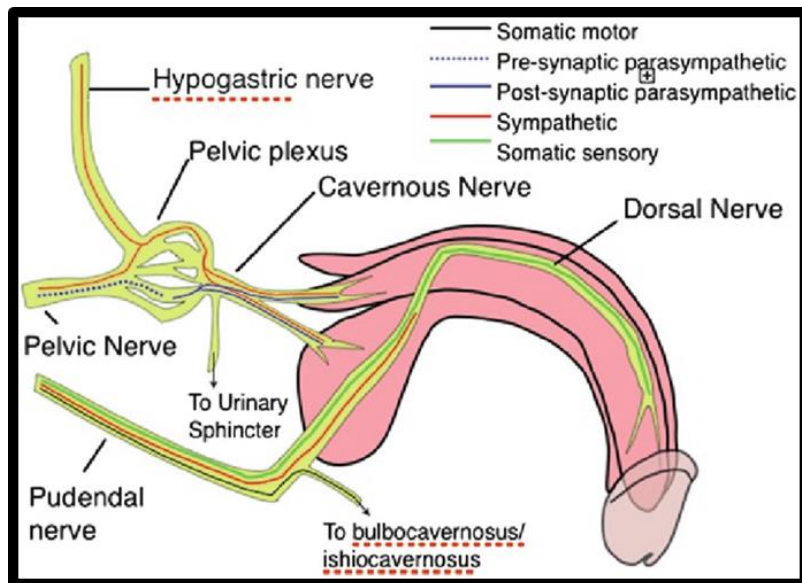
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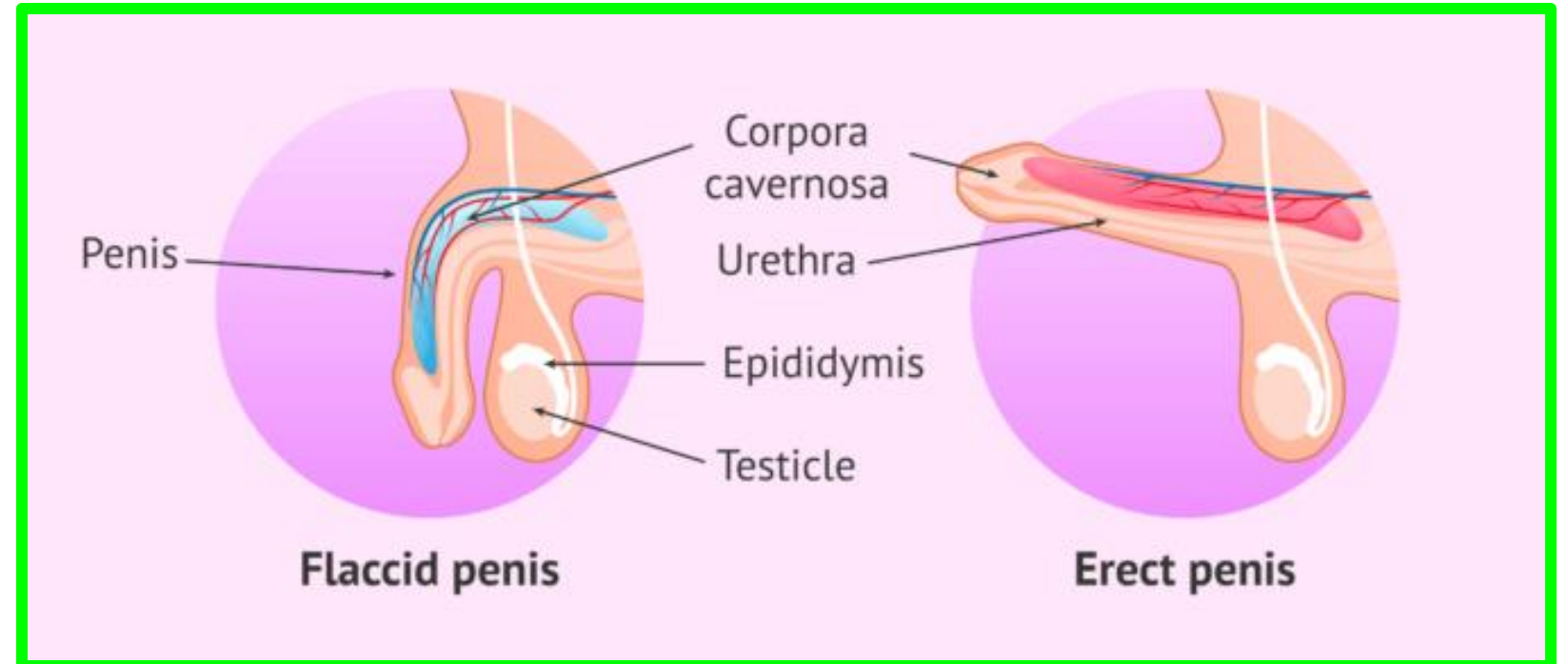
Cavernous nerves:

Penis

- ✓ Regulate penile erections by facilitating blood flow to the corpus cavernosum
- ✓ Originate from the **inferior hypogastric plexus to (prostatic plexus)**
- ✓ Containing both **parasympathetic (S 2,3,4)** and **sympathetic (T11-L2)**
- ✓ Run posterolateral to the prostate and are closely associated with the prostatic fascia
- ✓ Highly susceptible to damage during radical prostatectomy, leading to **erectile dysfunction (ED)**
- ✓ Innervate the **helicine arteries** of the erectile tissue



- Erection of the penis
- ✓ Erection of the penis (or clitoris) is a **purely vascular mechanism**.
- ✓ **Parasympathetic stimulation** leading to rapid inflow of blood and filling of the erectile tissue of the corpora cavernosa and thus pressure over the draining veins, leading to erection of the penis (or clitoris).
- ✓ **Ejaculation is sympathetic stimulation**.



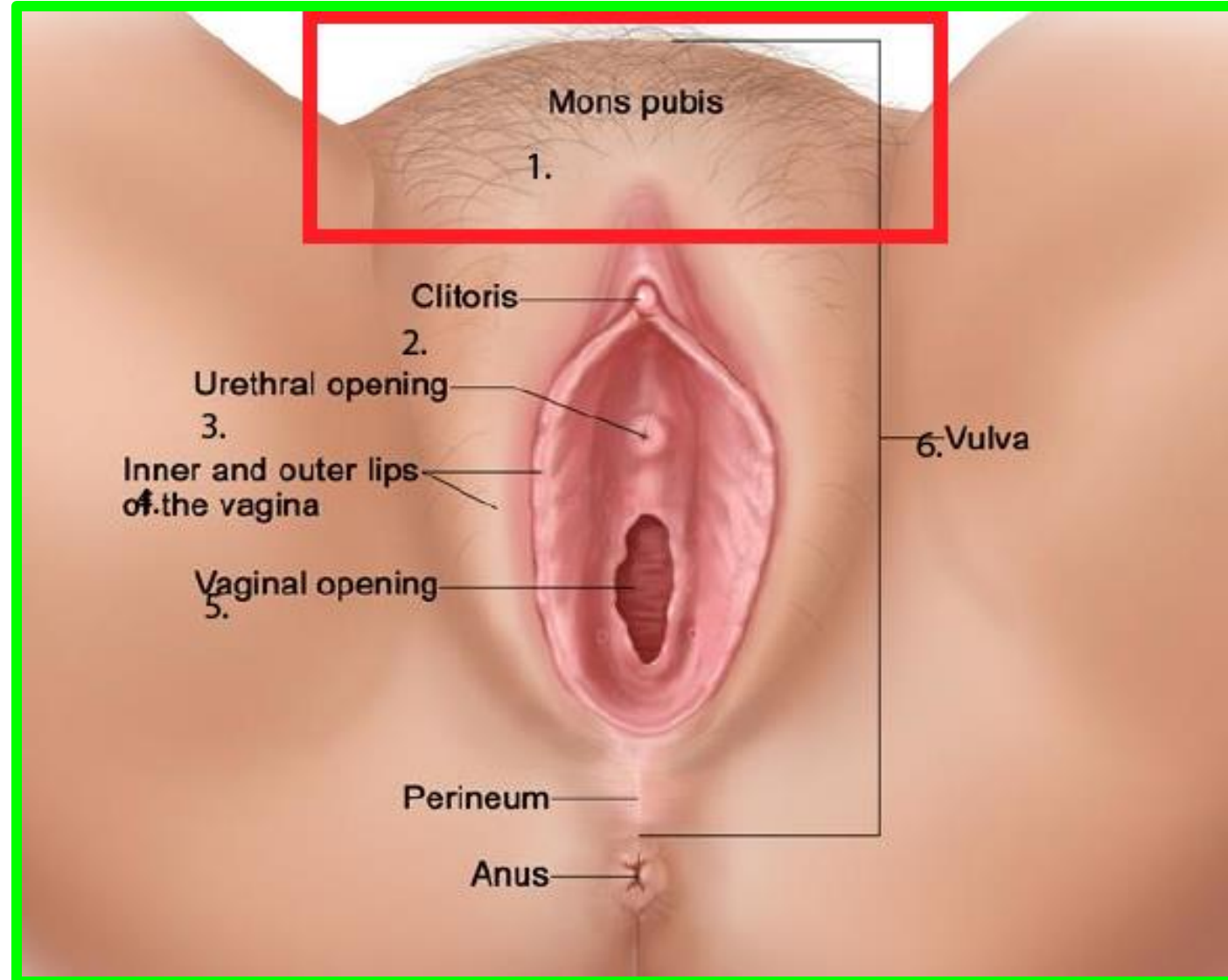
• Female External Genital Organ

Vulva

✓ The vulva is formed of the following parts.

1. Mons pubis, collection of fat overlying the pubis. They are covered by hair after puberty.

2. Labia majora a pair of skin folds, they are covered by hair after puberty.



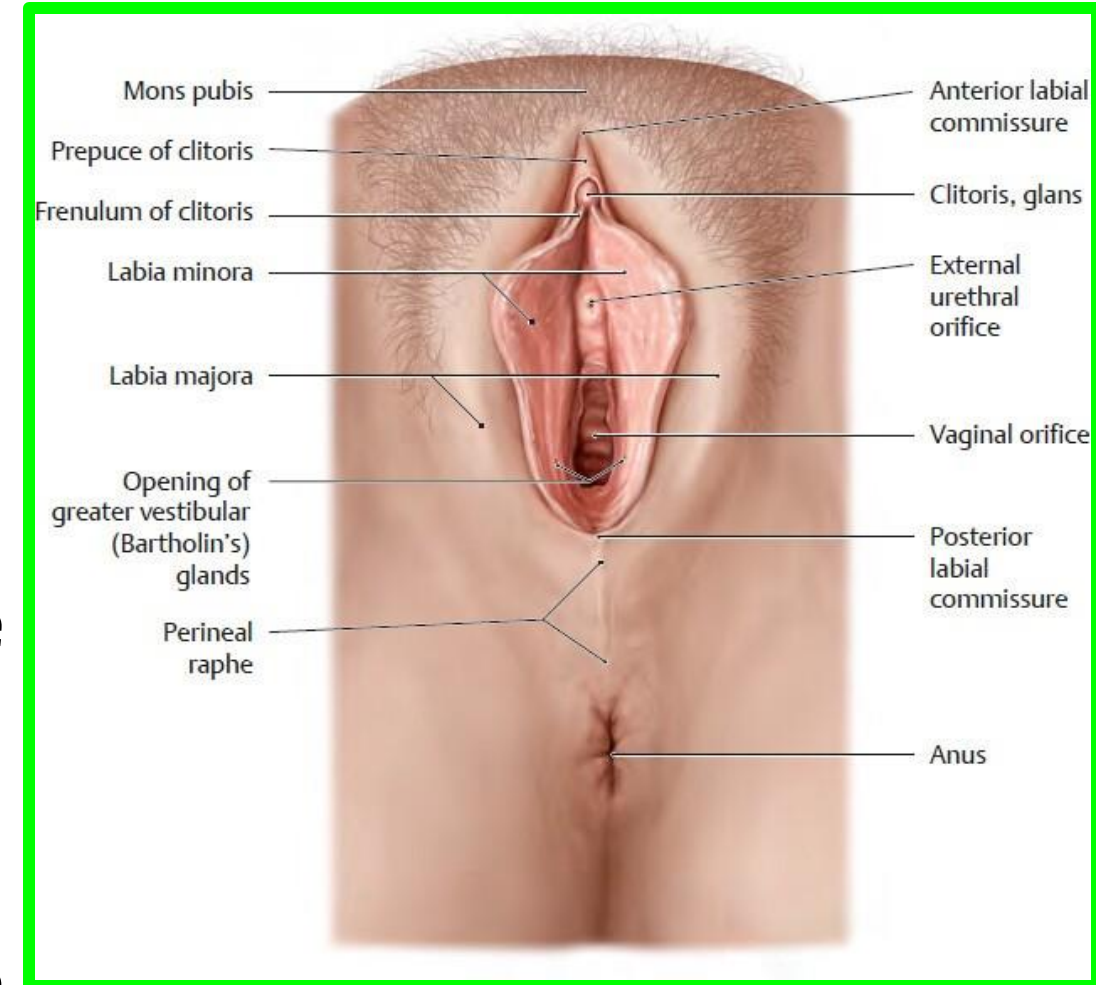
Vulva

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3. Labia minora a pair of thin skin folds between the two labia majora.

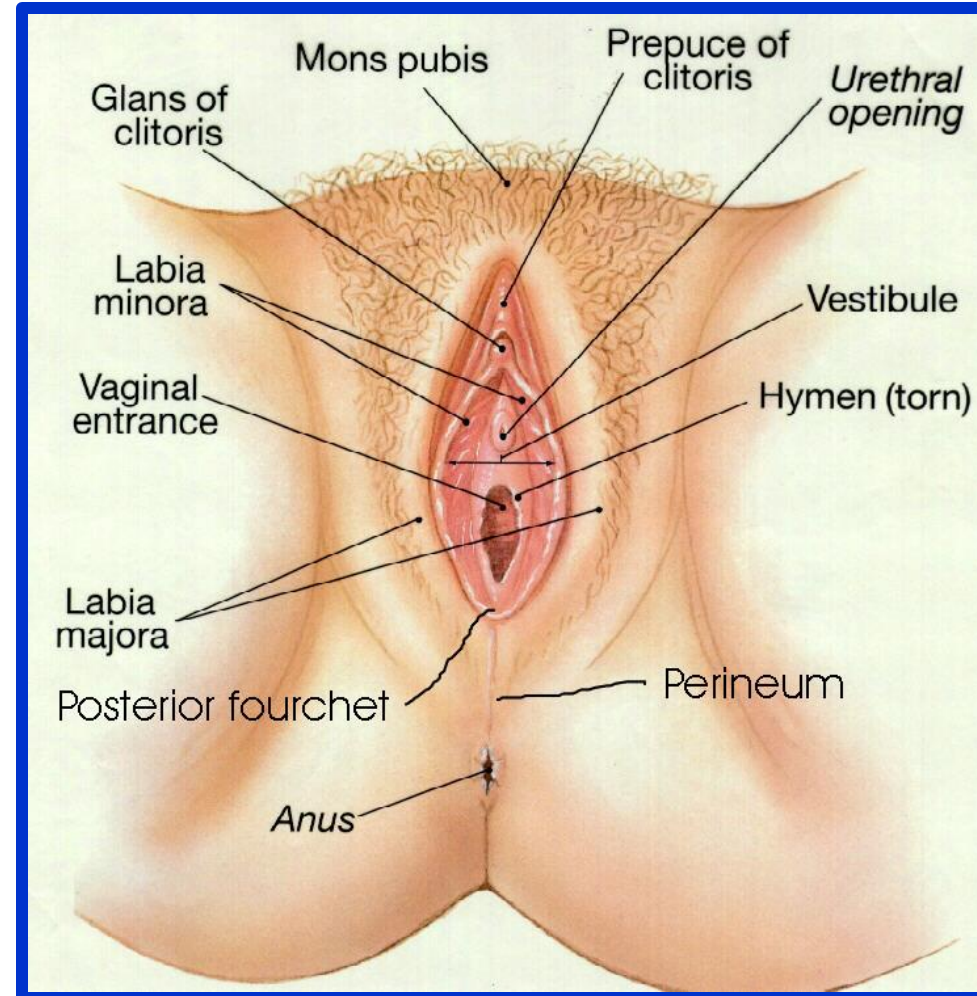
A. Anteriorly: each fold divides into two portions:

- ❖ **The upper division** passes above the clitoris to meet its fellow of the opposite side, forming the prepuce of the clitoris.
- ❖ **The lower division** passes beneath the clitoris to meet its fellow of the opposite side forming the frenulum of the clitoris.



Vulva

B. The posterior ends of the labia minora are joined across the middle line by a fold of skin called **the fourchette**.



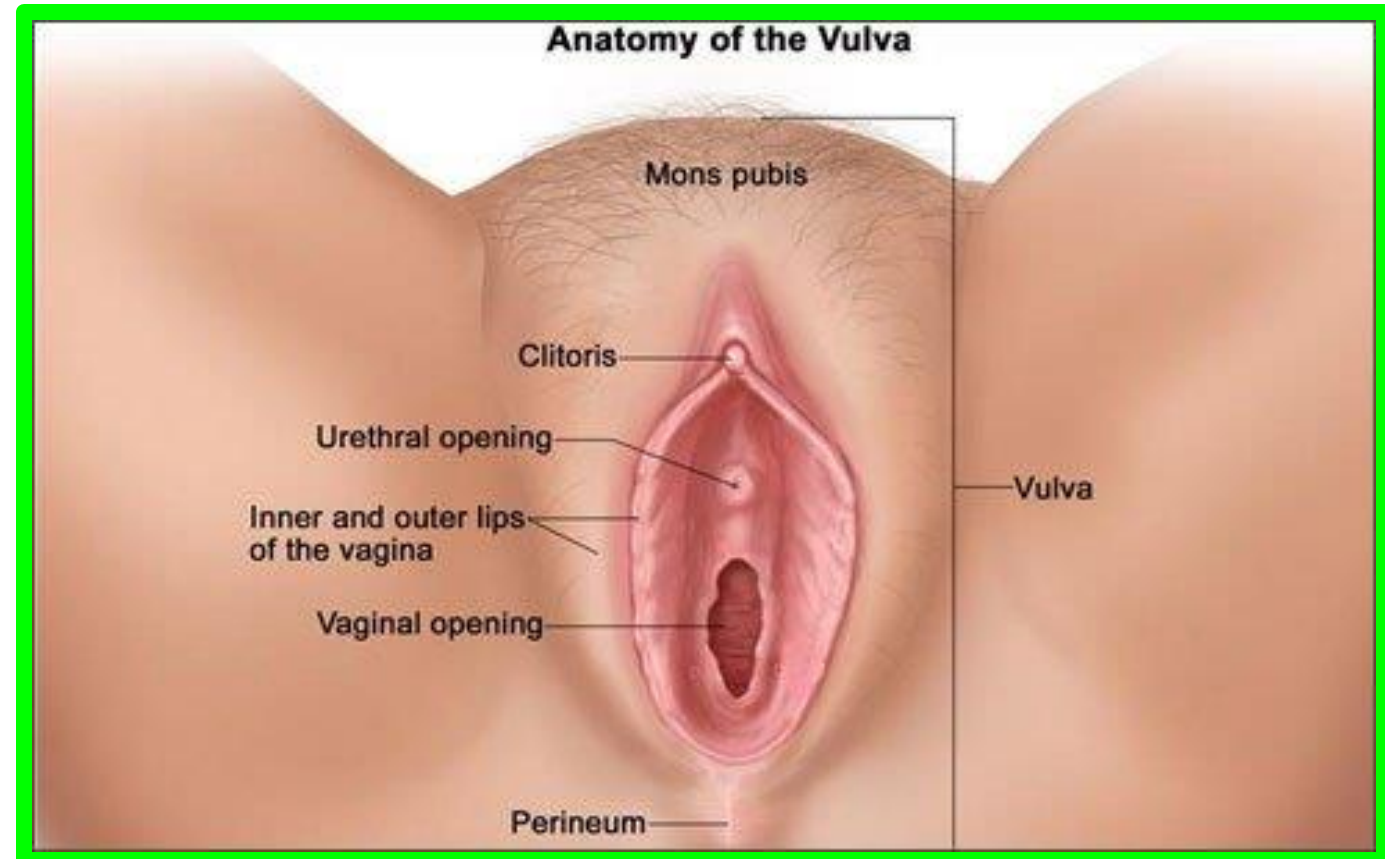
Vulva

4. Clitoris is an erectile organ, similar to the penis but is not traversed by the urethra.

- ✓ Its free end (**very sensitive, plays important role in sexual response**).
- ✓ It consists of two corpora cavernosa.

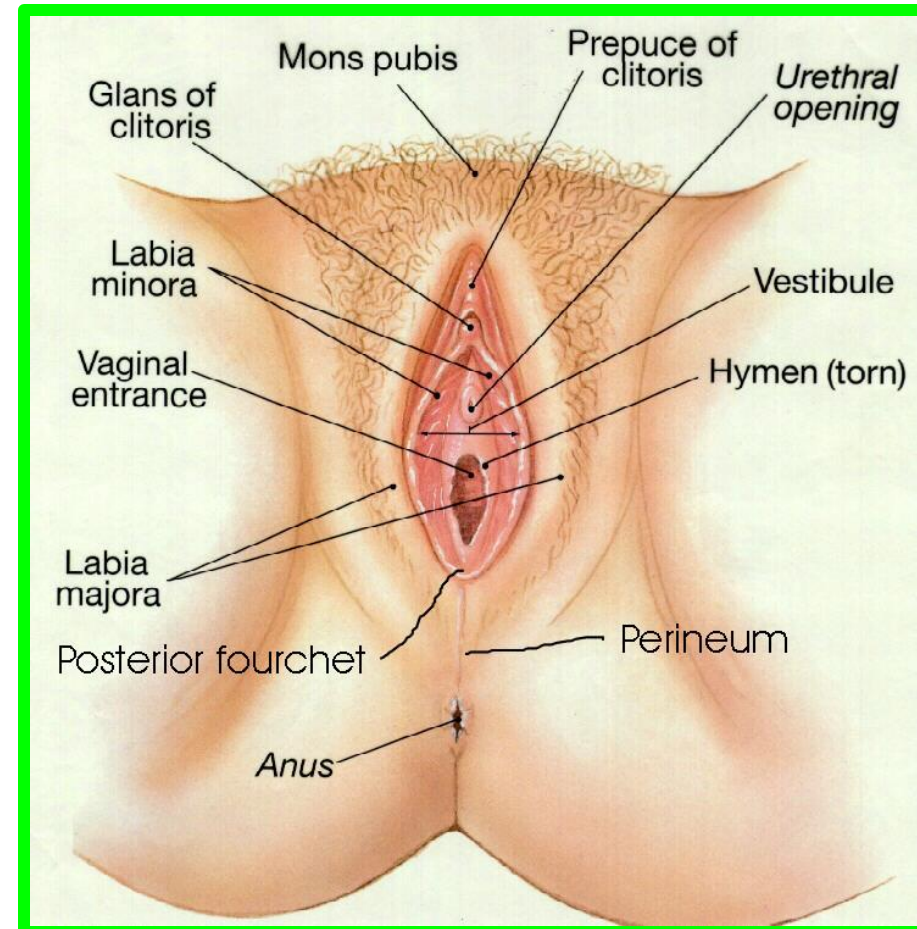
It is situated at **the apex of the vestibule** anteriorly .

The glans of the clitoris is partly hidden by **the prepuce**



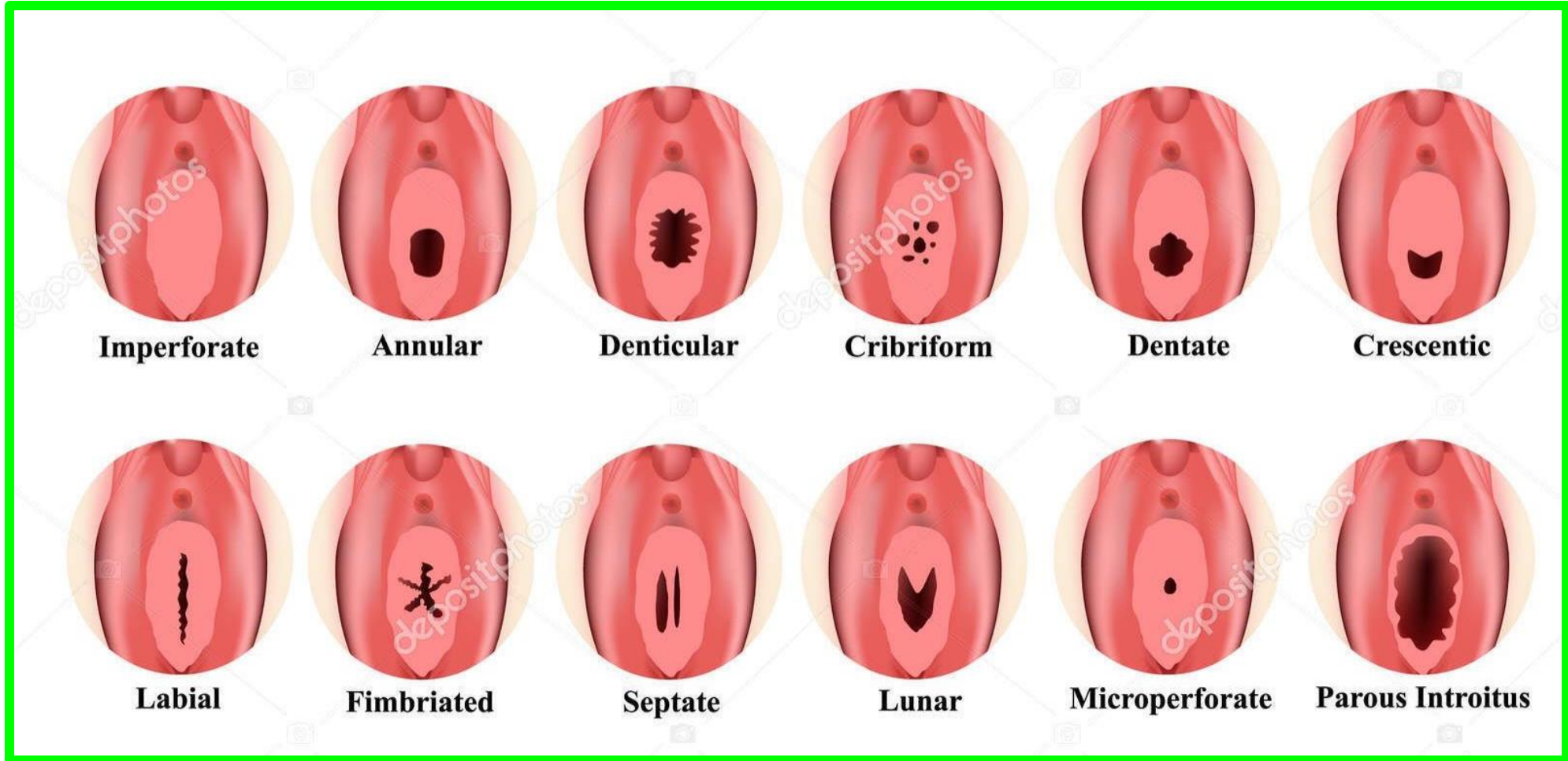
5. Vestibule this is the interval between the two labia minora. It is a smooth triangular area bounded laterally by **the labia minora** with **the clitoris** at its apex and **the fourchette** at its base

- ✓ It receives **the urethral orifice** anteriorly and **vaginal orifice** posteriorly.
- ✓ The vaginal orifice is closed by **the hymen** in virgins.



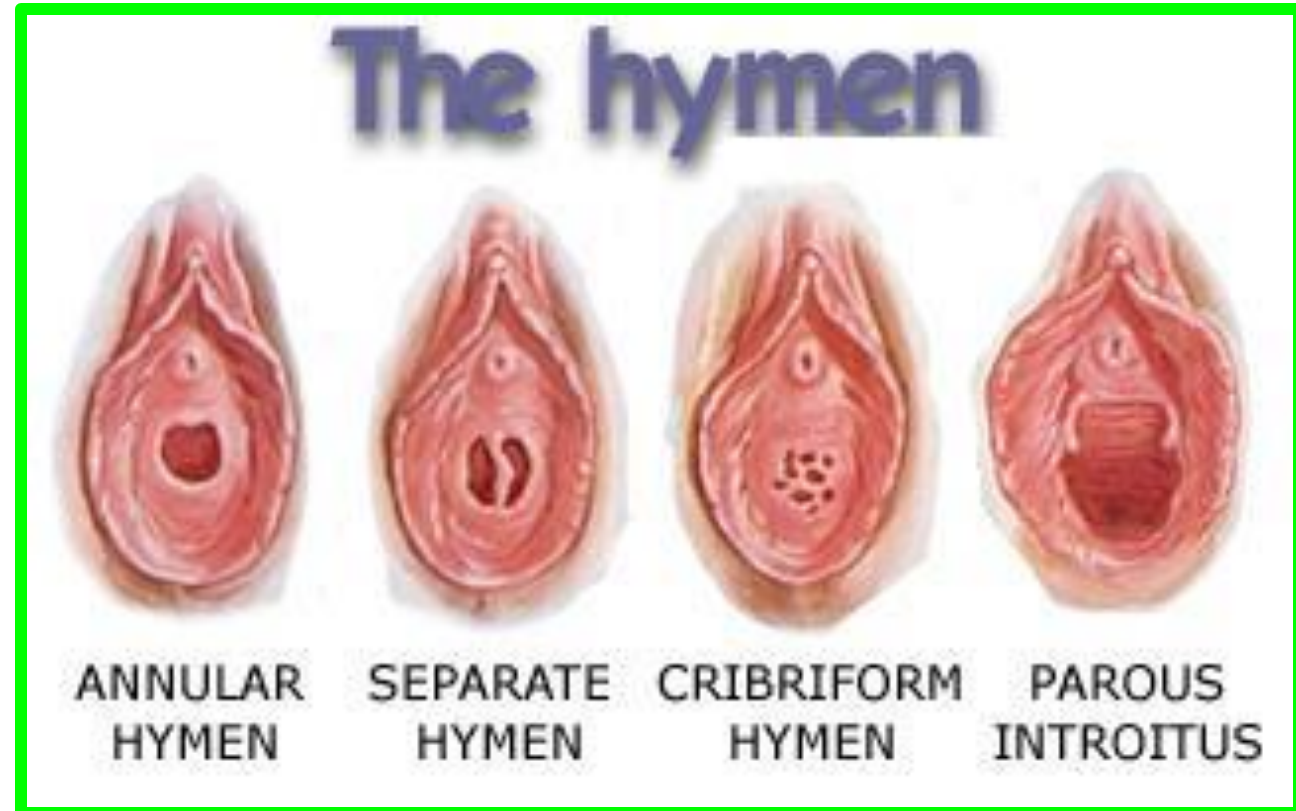
Vulva

✓ The vaginal orifice is protected in virgins by thin fold of mucous membrane called **the hymen**, which is perforated at its center .



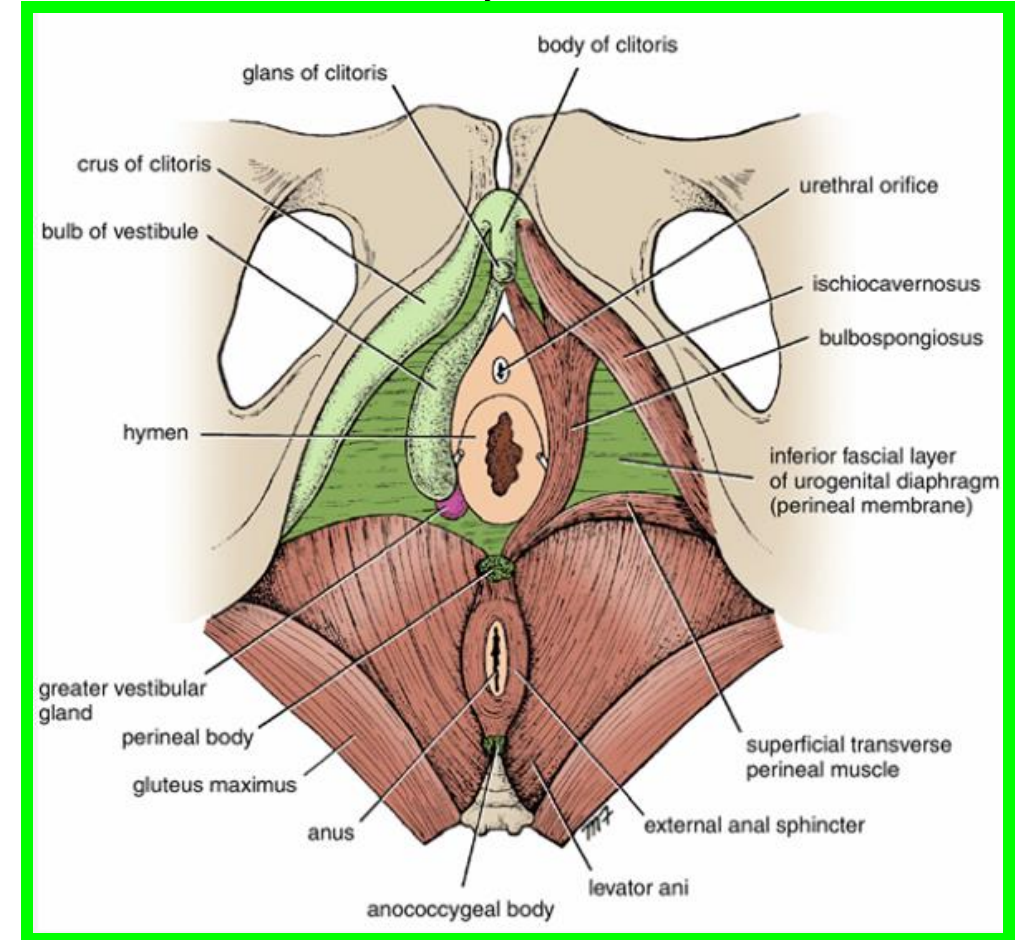
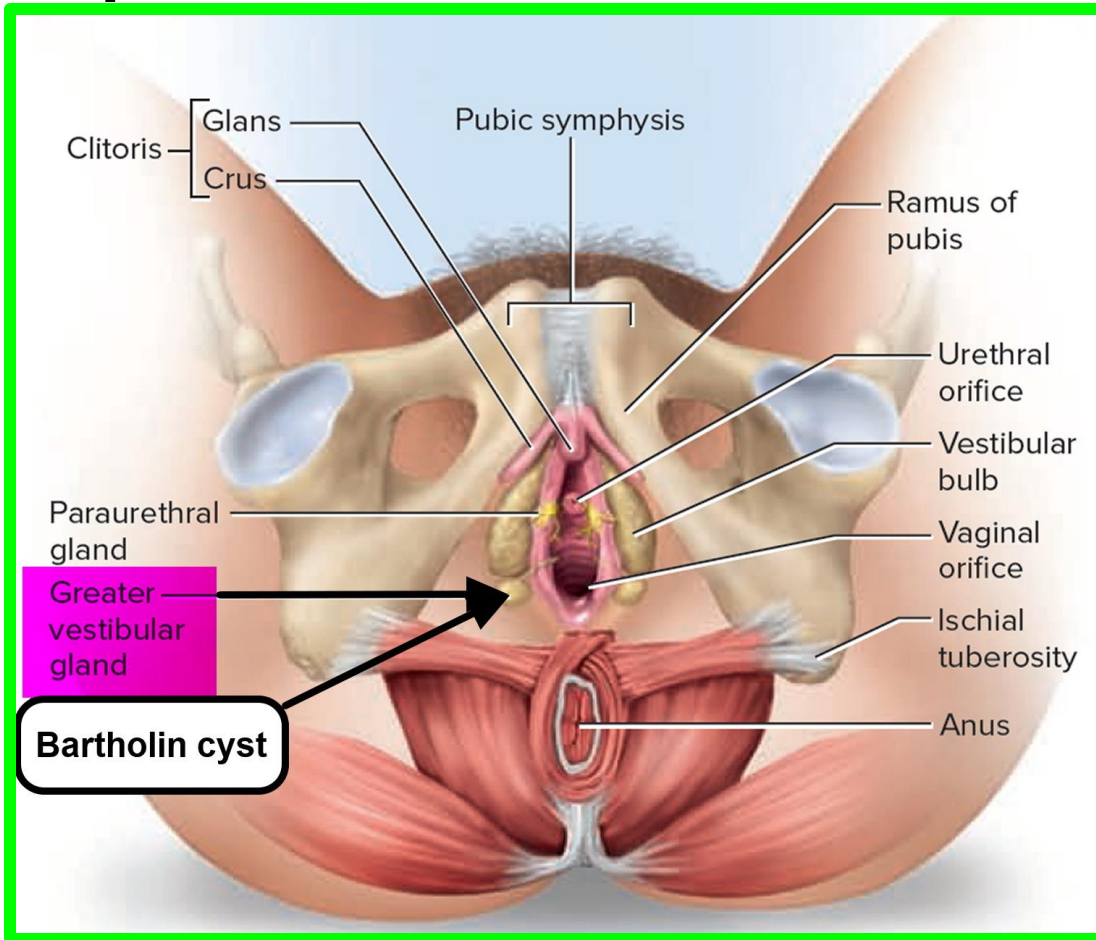
□ Variability in the shape of The hymen;

1. Ring shape (the commonest form).
2. Semilunar fold.
3. Cribriform.
4. It may be absent.
5. Complete septum called imperforate hymen.
6. It may persist after copulation.



6. Greater vestibular glands (Bartholin glands);

✓ Are 2 small rounded mucus-secreting glands that lie under cover of the posterior parts of the bulb of the vestibule and the labia majora

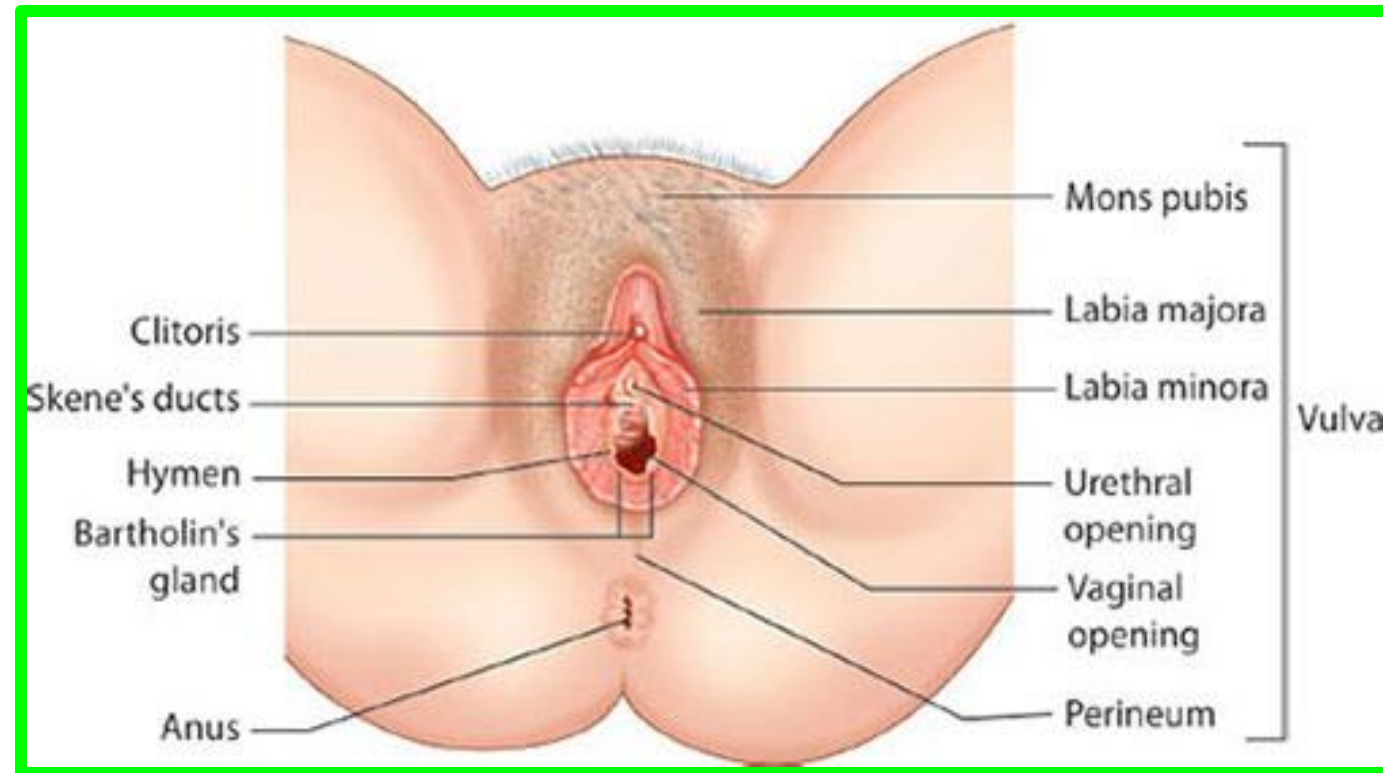


Vulva

6. Greater vestibular glands (Bartholin glands);

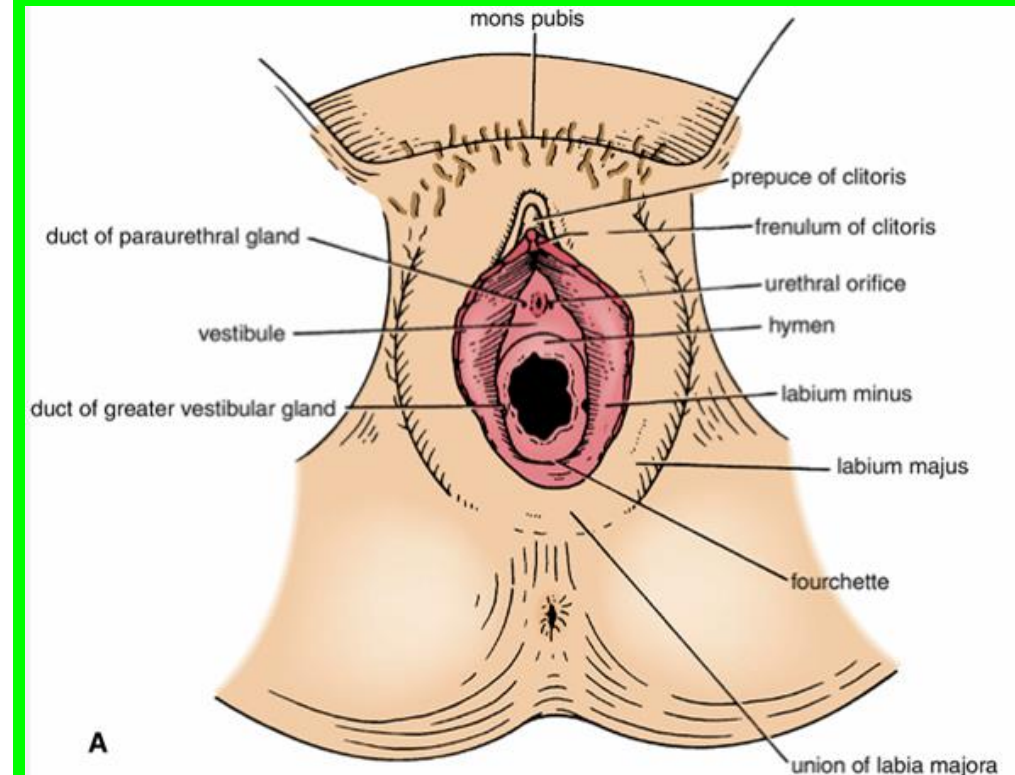
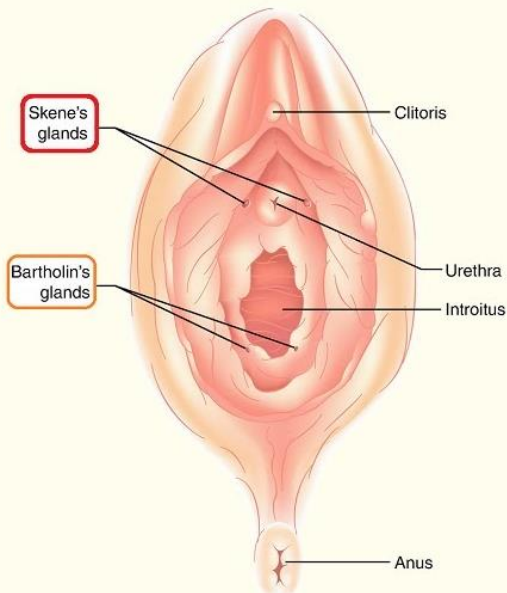
✓ Each drains its secretion into the vestibule by a small duct, which opens into the **groove between the hymen and the posterior part of the labium minus**

✓ These glands secrete a lubricating mucus during sexual intercourse



- ✓ The paraurethral glands, which correspond to **the prostate** in the male
- ✓ Open into the vestibule by small ducts on either side of **the urethral orifice**
- ✓ Lie within the wall of the distal female urethra and **secrete mucus during sexual activity**. Each gland is drained by a single paraurethral (**Skene**) duct.

Skene's gland



Vulva

Lymph Drainage

Medial group of superficial inguinal nodes

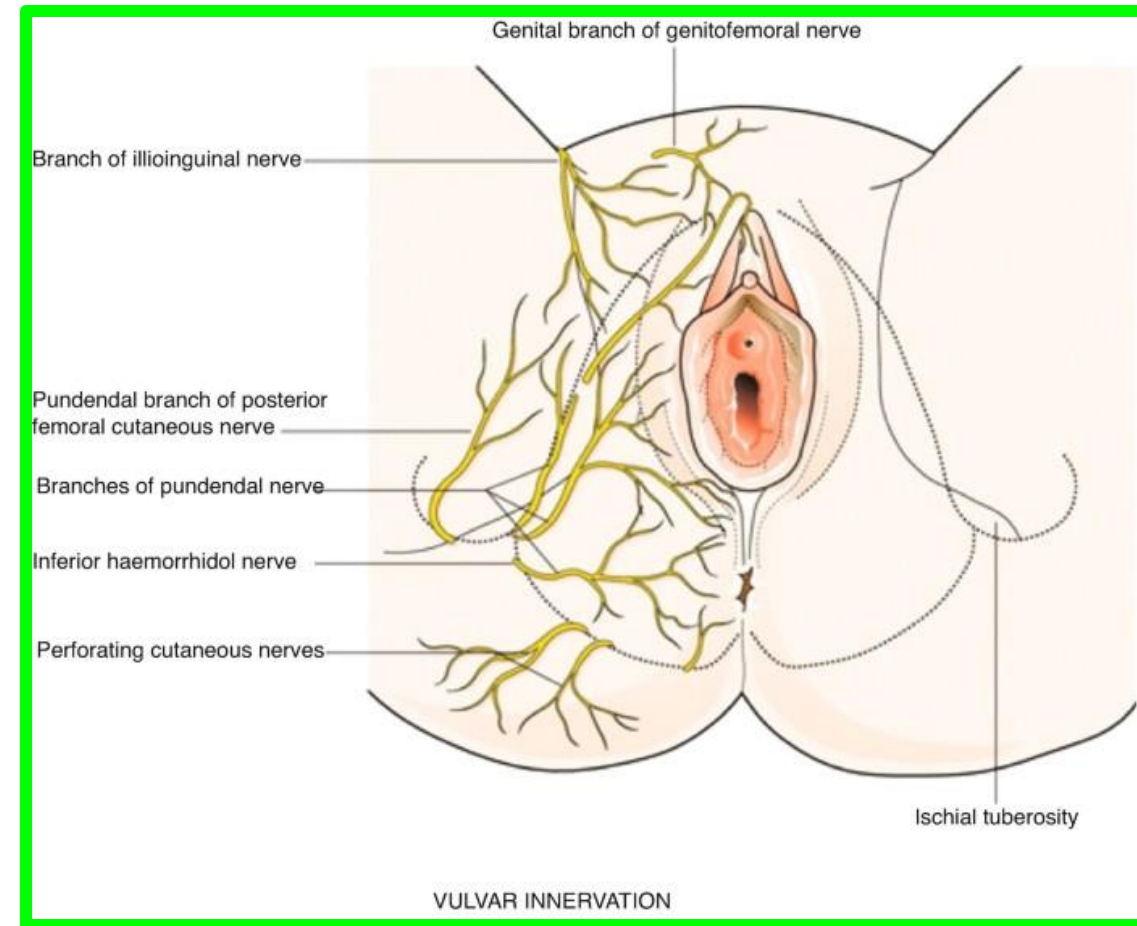
Nerve Supply

□ The anterior parts of the vulva are supplied by:

- ✓ The ilioinguinal nerves
- ✓ The genital branch of the genitofemoral nerves.

□ The posterior parts of the vulva are supplied by:

- ✓ The branches of the perineal nerves and
- ✓ The posterior cutaneous nerves of the thigh

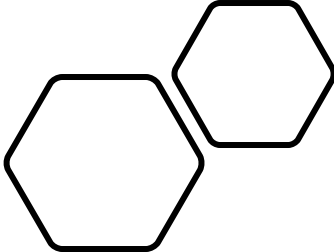


**** Female orgasm**

- ❖ Sexual excitement induces **vascular dilatation and engorgement of the vulva.**
- ❖ It is **parasympathetic as male.**
- ❖ The vagina becomes moistened by the mucus membrane.
- ❖ The greater vestibular glands secrete a small amount of fluid.
- ❖ At **the climax**, there is **series of involuntary muscle contraction.**



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