# URETHRA

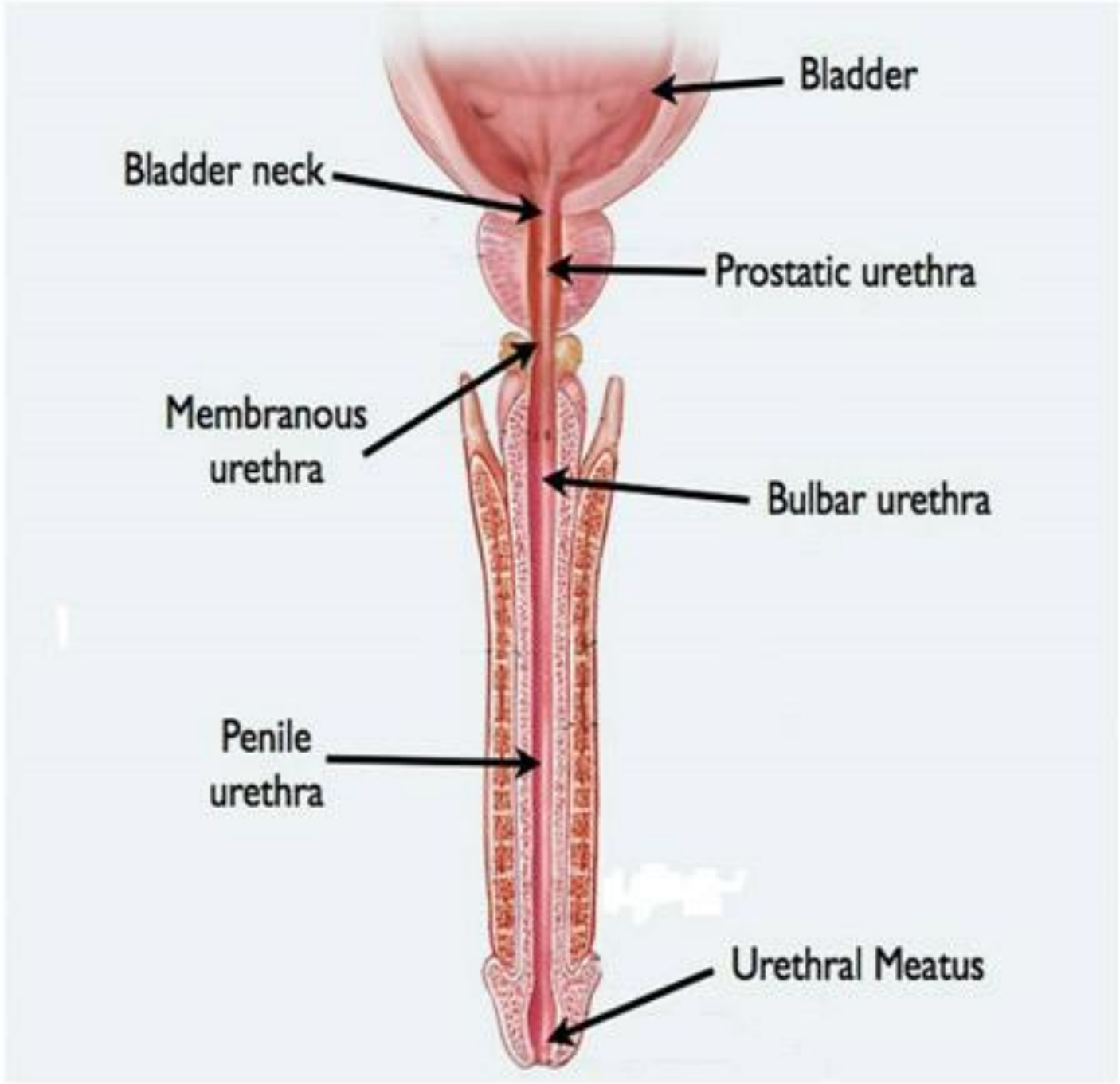
- **Responsible for transporting urine from the bladder to an external opening in the perineum.**
- **It is lined by stratified columnar epithelium, which is protected from the corrosive urine by mucus secreting glands.**

# Male Urethra

- **Male urethra is a membranous canal for the external discharge of urine and seminal fluid.**
- **The male urethra is 18 to 20 cm long.**

**Extent and Location**

- **The urethra extends from the internal urethral orifice at the neck of the urinary bladder to the external urethral orifice at the tip of the penis.**


Bladder
Bladder neck
Prostatic urethra
Membranous urethra
Bulbar urethra
Penile urethra
Urethral Meatus

- **Male urethra can be divided anatomically into three parts (proximal to distal):**

**1. Prostatic urethra:**

- **Begins as a continuation of the bladder neck and passes through the prostate gland.**
- **It is 3 cm long**
- **Receives the ejaculatory ducts and the prostatic ducts**
- **The widest and most dilatable portion of the urethra**
- **narrowest where it joins the membranous urethra.**

- **On transverse section, it is star-shaped. The posterior wall or floor of the prostatic urethra presents the following features.**

***(I) urethral crest or veru-montanum- is a median longitudinal ridge of mucous* membrane.**

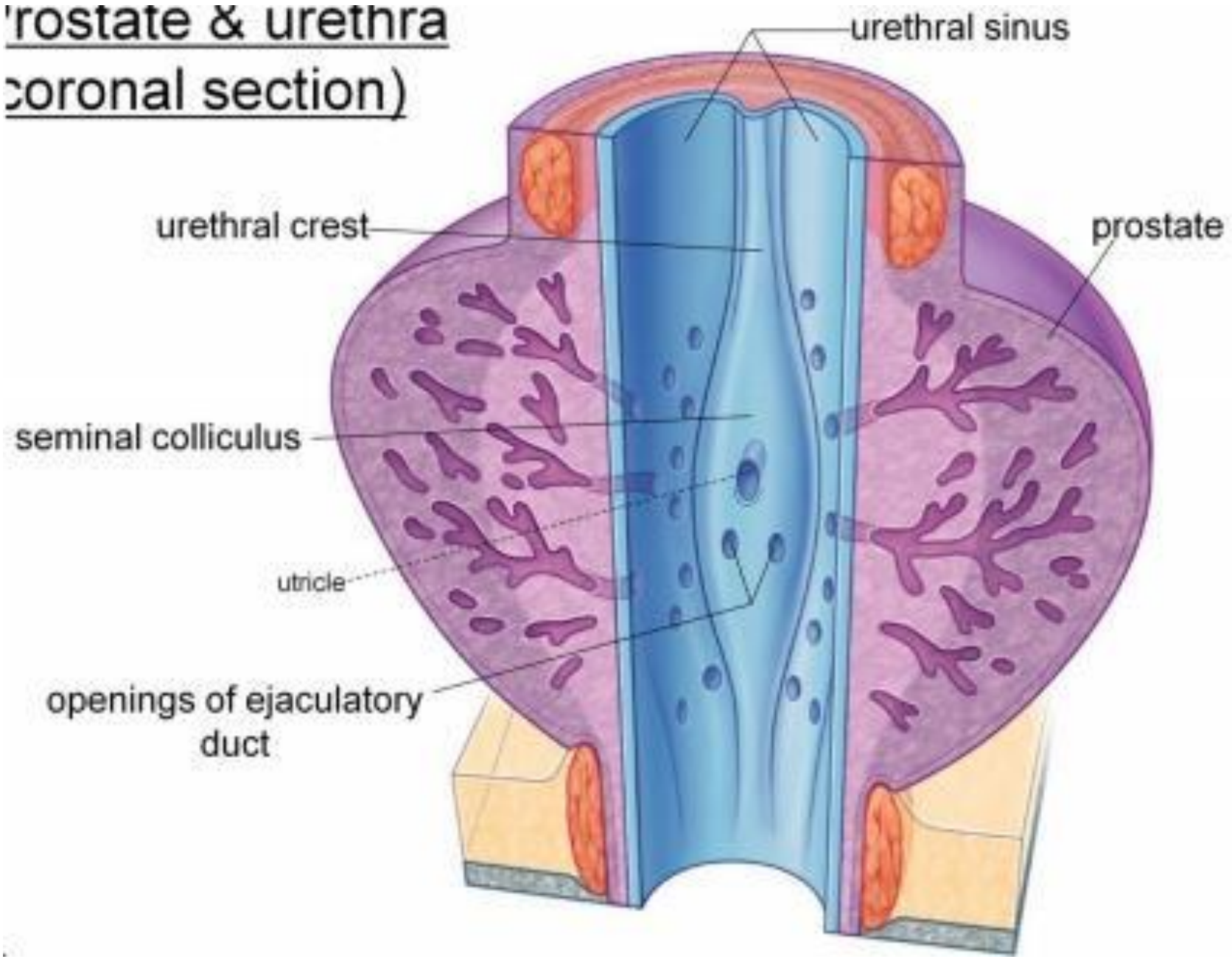
**2) C*olliculus seminalis- is an elevation on the middle of the urethral crest. On this elevation there is a slit-like orifice through which the prostatic utricle opens into the urethra.***

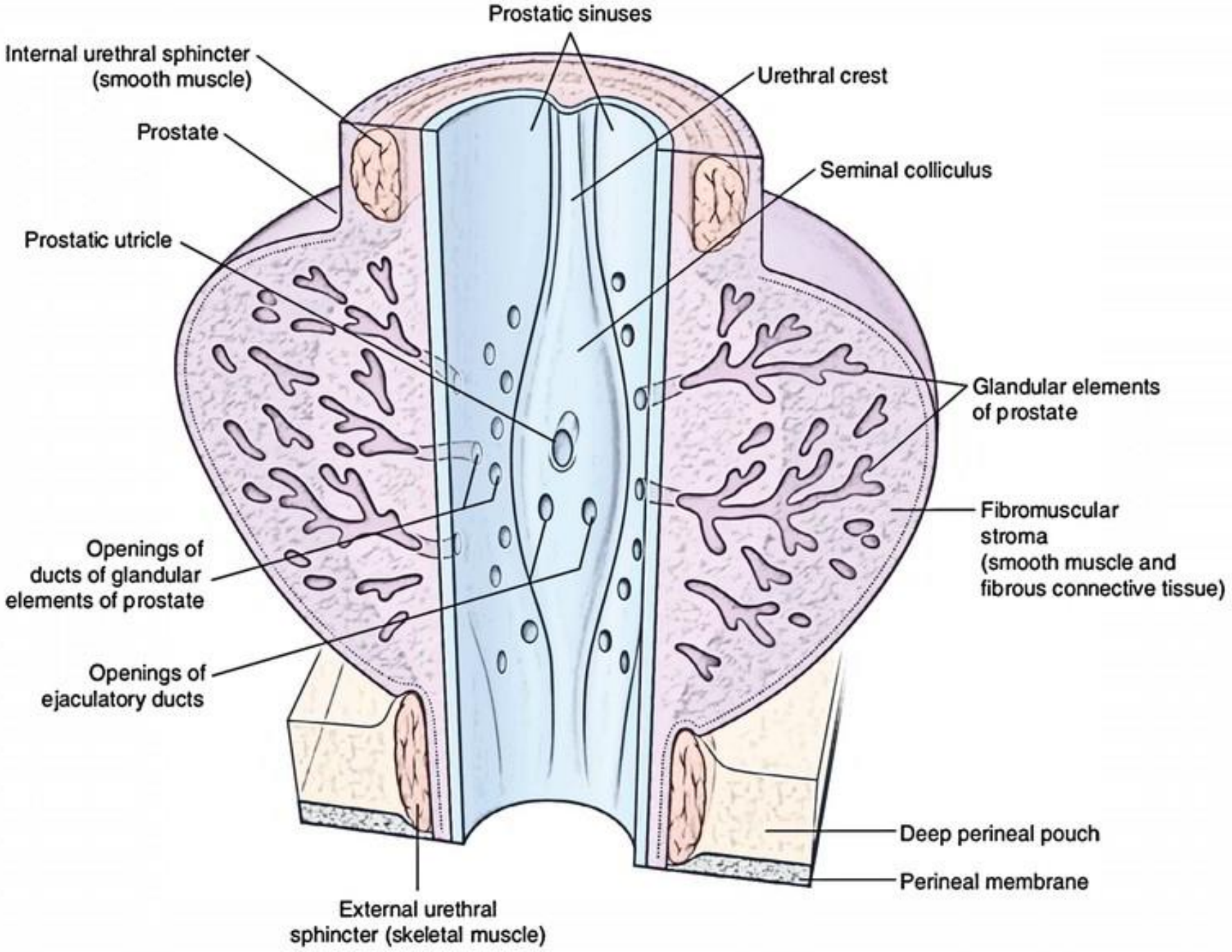
3) **prostatic sinuses- are two vertical grooves situated one on each side of the urethral crest.**

**Each sinus presents the openings of about 20 to 30 prostatic glands.**

***Prostatic utricle- is a blind sac, about 6 mm long, which lies within the prostate. It is homologous with the uterus or vagina of the female***

# 'rostate & urethra
## coronal section)




Prostatic sinuses
Internal urethral sphincter (smooth muscle)
Urethral crest
Prostate
Seminal colliculus
Prostatic utricle
Glandular elements of prostate
Fibromuscular stroma (smooth muscle and fibrous connective tissue)
Openings of ducts of glandular elements of prostate
Openings of ejaculatory ducts
Deep perineal pouch
Perineal membrane
External urethral sphincter (skeletal muscle)

**2. Membranous urethra:**

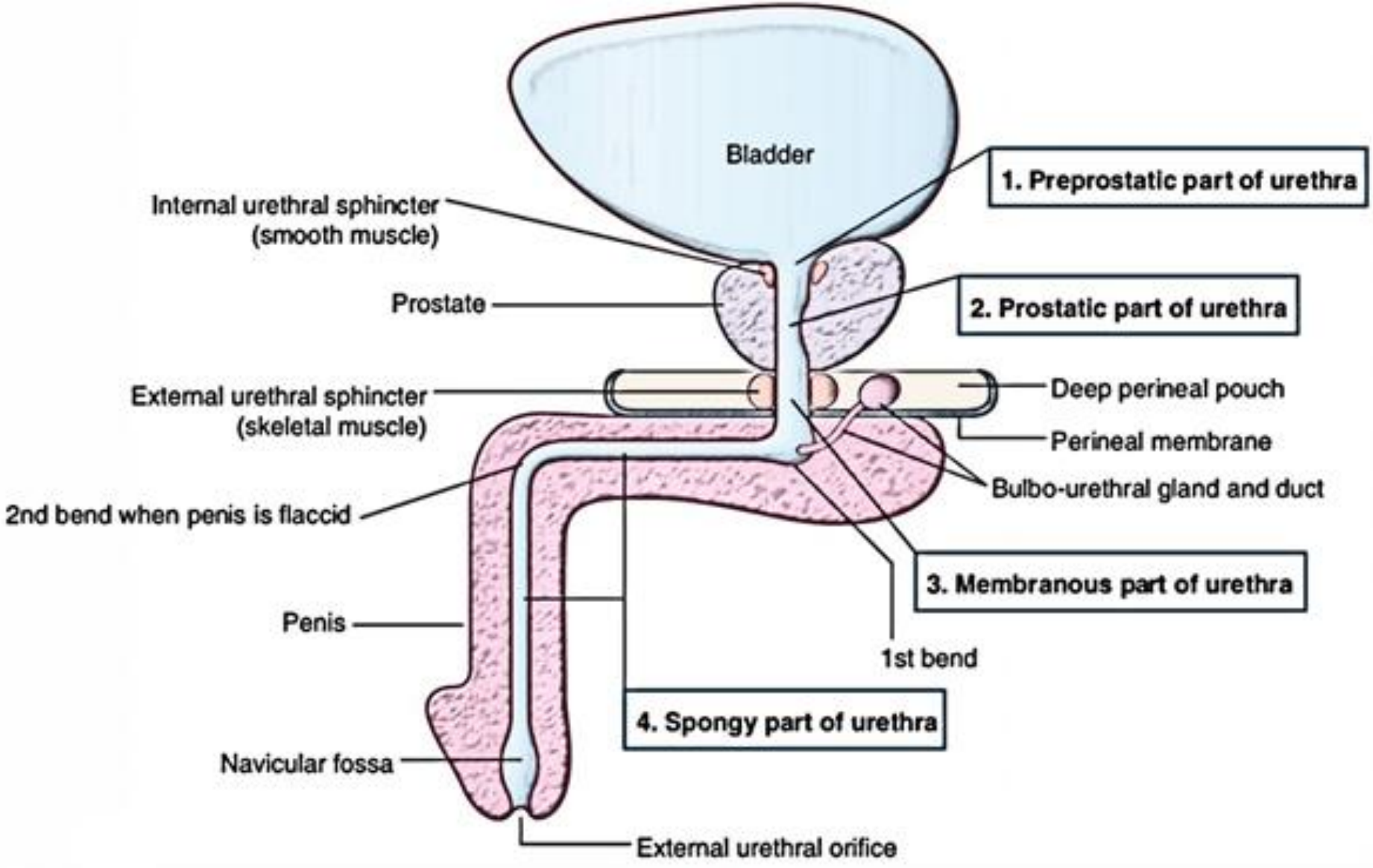
**Passes through the pelvic floor and the deep perineal pouch and pierces the perineal membrane about 2.5 cm below and behind the pubic symphysis .**

**It is 1.5-2 cm long**

**Surrounded by the external urethral sphincter – which provides voluntary control of micturition.**

**The narrowest and least dilatable portion of the urethra.**

- **The bulbourethral glands of Cowper are placed one on each side of the membranous urethra, although their ducts open into the spongy part of the urethra after piercing the perineal membrane.**


Bladder
1. Preprostatic part of urethra
Internal urethral sphincter
(smooth muscle)
Prostate
2. Prostatic part of urethra
External urethral sphincter
(skeletal muscle)
Deep perineal pouch
Perineal membrane
Bulbo-urethral gland and duct
2nd bend when penis is flaccid
3. Membranous part of urethra
Penis
1st bend
4. Spongy part of urethra
Navicular fossa
External urethral orifice

Men

3. **Penile (bulbous/spongy) urethra: Passes through the bulb and corpus spongiosum of the penis, ending at the external urethral orifice.**

**The penile urethra is 15 cm long**

**Receives the bulbourethral glands proximally and also numerous urethral glands of Littre open into the penile urethra**

**In the glans (head) of the penis, the urethra dilates to form the navicular fossa.**

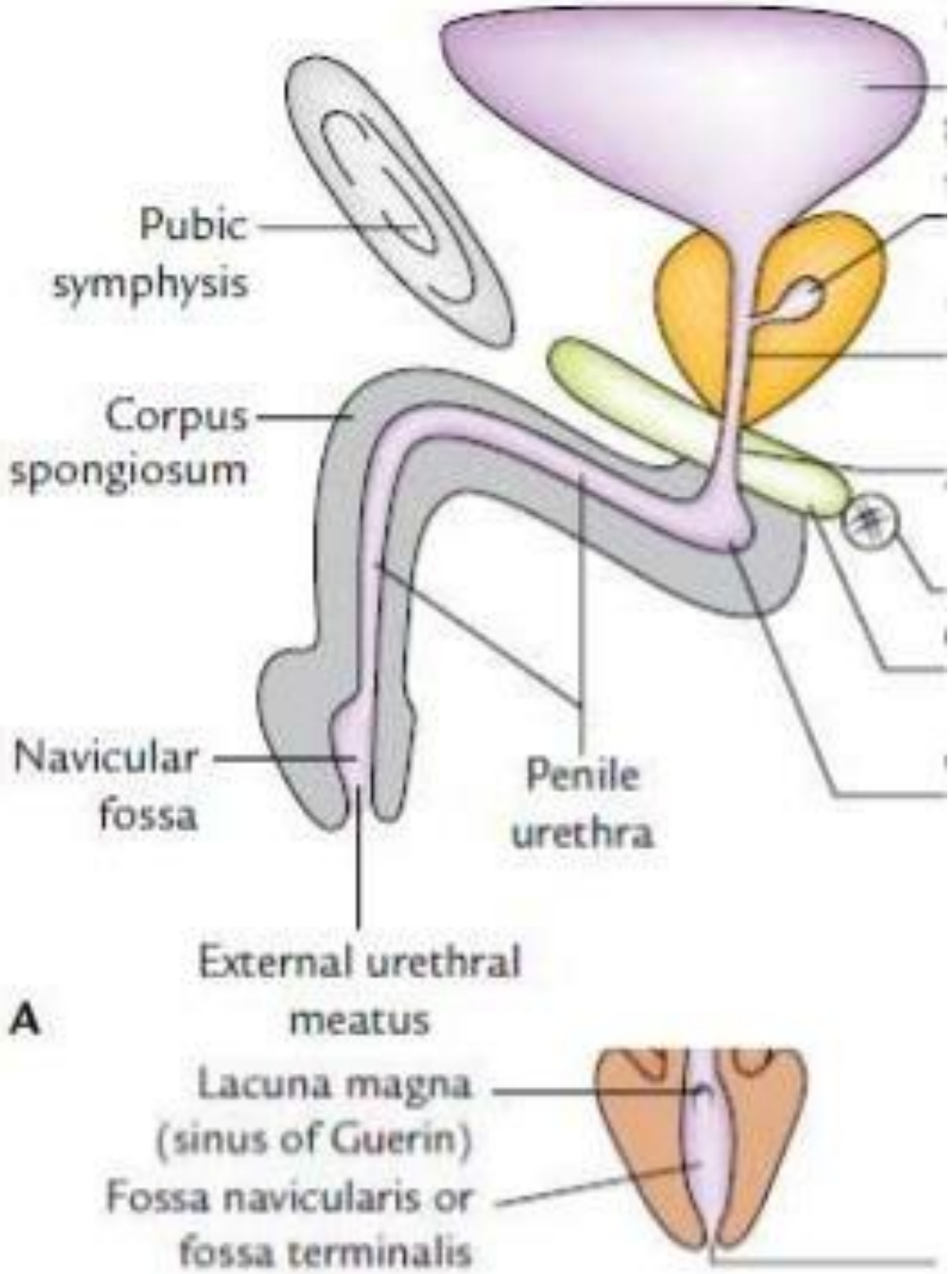
- **The penile urethra is narrow with a uniform diameter of about 6 mm in the body of penis.**
- **It is dilated :**

**(a) At its commencement, to form the intrabulbar fossa**

**(b) within the glans penis to form the navicular or terminal fossa.**

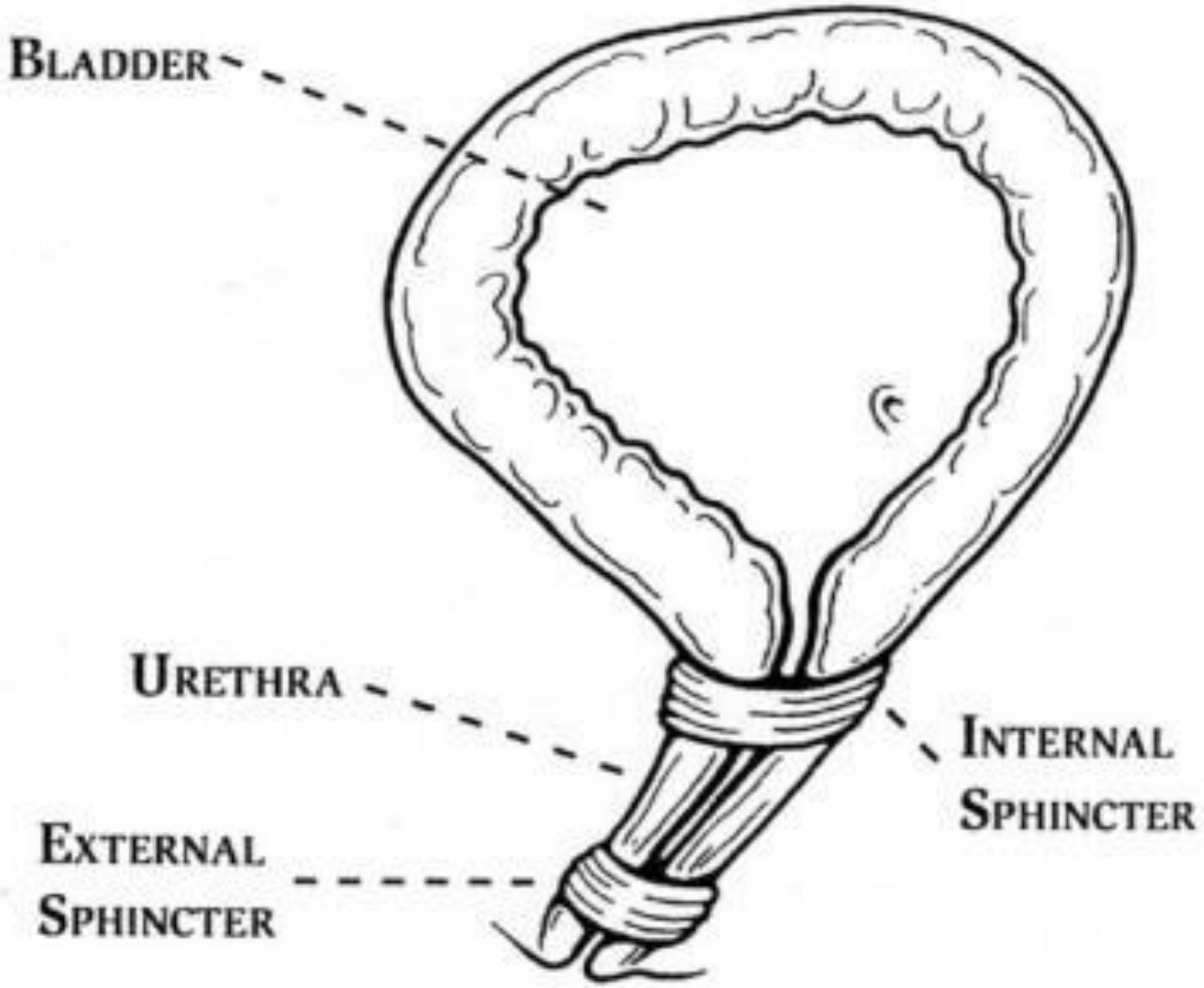
**The external urethral orifice is the narrowest part of the male urethra. It forms a sagittal slit about 6 mm long, and is bounded on each side by a small labium.**

- **Several small pit-like recesses or lacunae of Morgagni present in penile urethra. One lacuna present in the roof of the navicular fossa is the largest, and *is known as the lacuna magna or sinus of Guerin. The lacunae receive the openings of the urethral glands.***


Pubic symphysis
Corpus spongiosum
Navicular fossa
Penile urethra
External urethral meatus
A
Lacuna magna (sinus of Guerin)
Fossa navicularis or fossa terminalis

- **Sphincters of the Urethra**

1. **The *internal urethral sphincter or sphincter vesicae is involuntary in nature. It is made up of smooth muscle fibres.* It controls the neck of the bladder and the prostatic urethra above the opening of the ejaculatory duct.**
2. **The *external urethral sphincter or sphincter urethrae is voluntary in nature. It is made up of striated muscle fibres and is supplied by the perineal branch of the pudendal nerve (S2 to S4). It controls the membranous urethra and is responsible for the voluntary holding of urine.***


BLADDER
URETHRA
INTERNAL SPHINCTER
EXTERNAL SPHINCTER

**Blood supply-**

1. **Prostatic urethra – supplied by the inferior vesical artery .**
2. **Membranous urethra – supplied by the bulbourethral artery (branch of the internal pudendal artery)**
3. **Penile urethra – supplied directly by branches of the internal pudendal artery.**

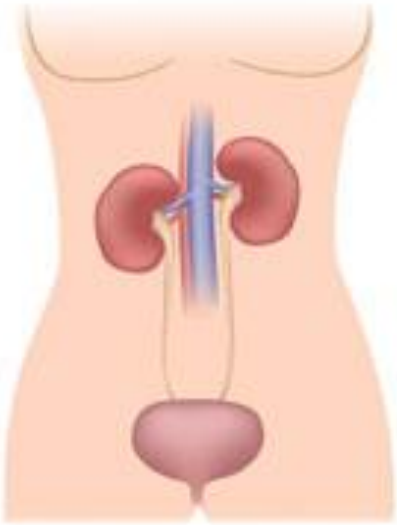
**Nerve supply- from the prostatic plexus, which contains a mixture of sympathetic, parasympathetic and visceral afferent fibres.**

- **Lymphatic Drainage-**

**The prostatic and membranous portions drain to the obturator and internal iliac nodes, while the penile urethra drains to the deep and superficial inguinal nodes.**

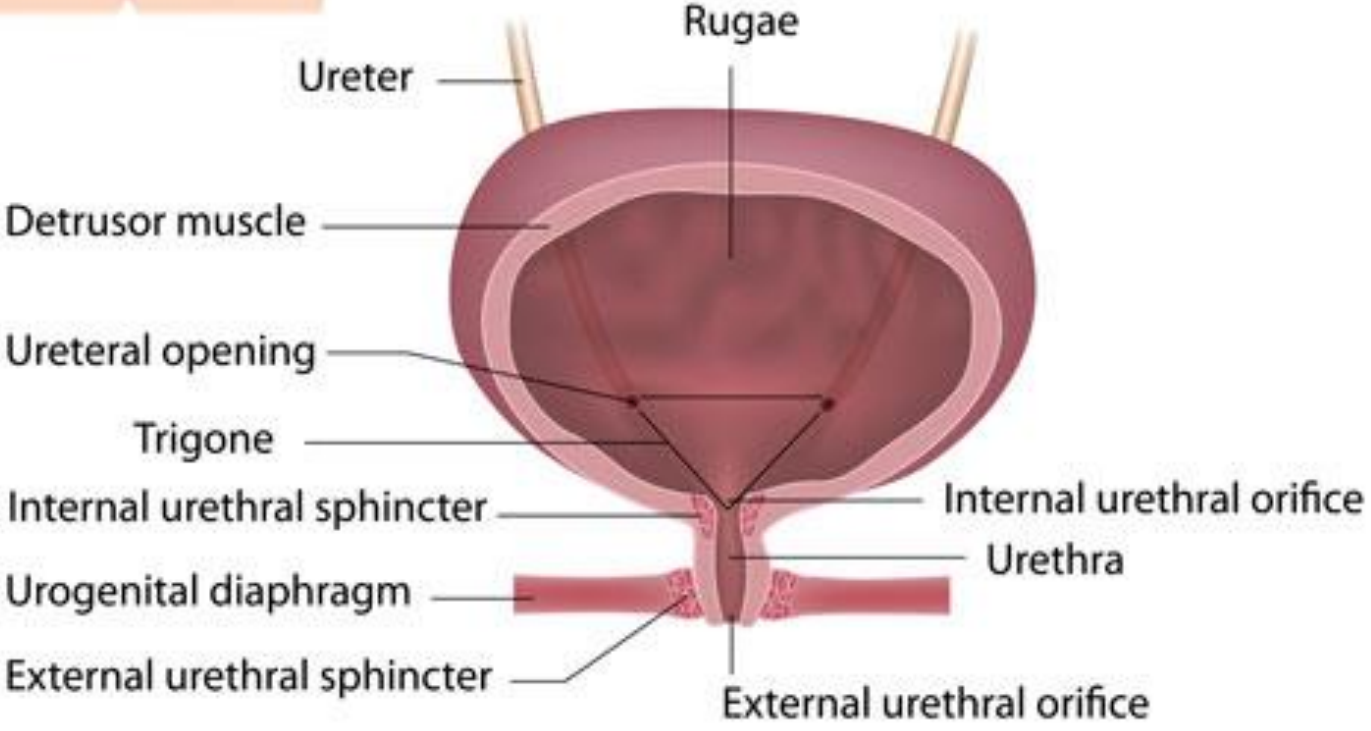
# Female Urethra

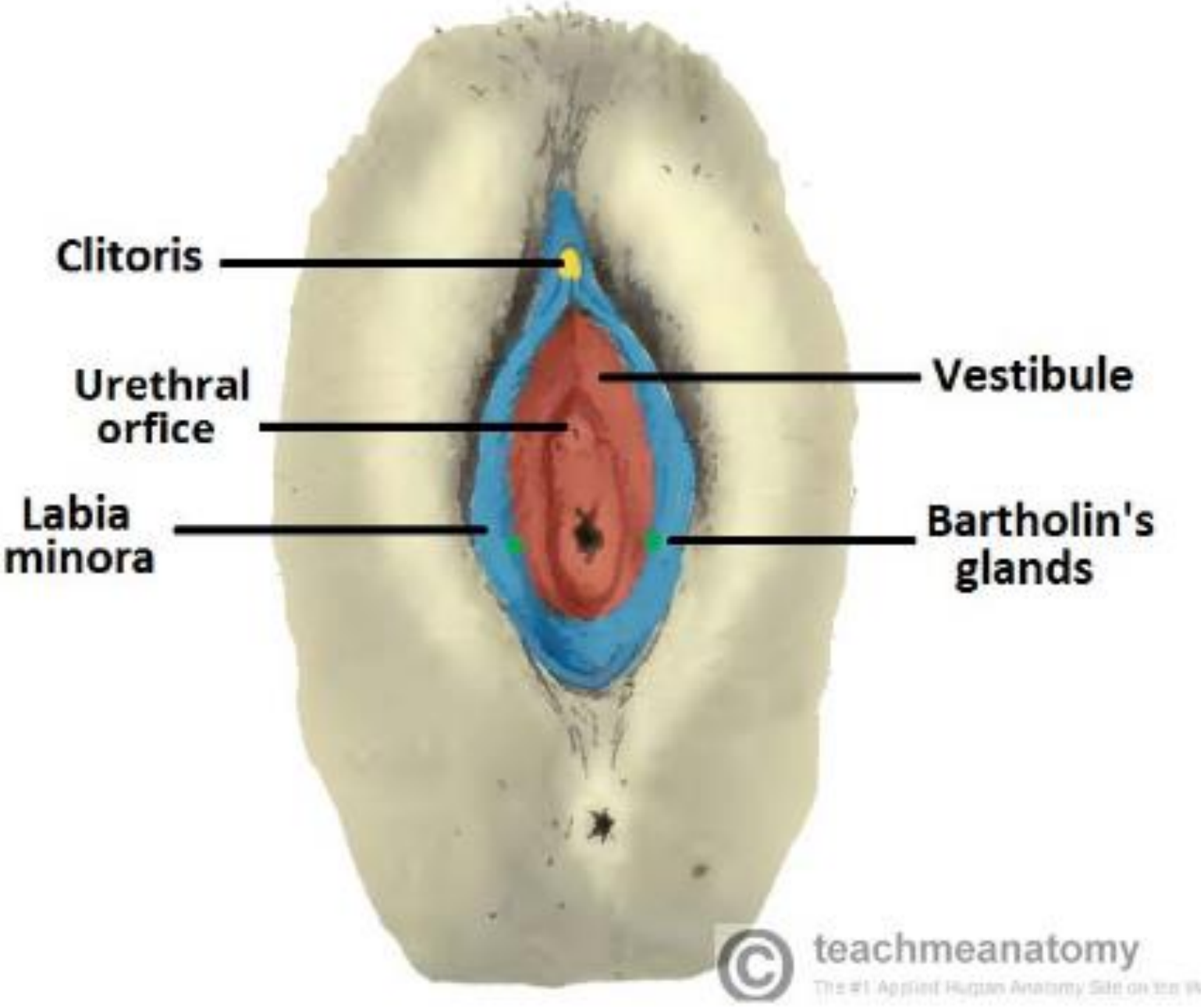
- **4cm in length and 6 mm in diameter .**
- **The urethra begins at the neck of the bladder, and passes inferiorly through the perineal membrane and muscular pelvic floor. It opens directly onto the perineum, in an area between the labia minora, known as the vestibule.**
- **Within the vestibule, the urethral orifice is located anteriorly to the vaginal opening, and 2-3cm posteriorly to the clitoris**.



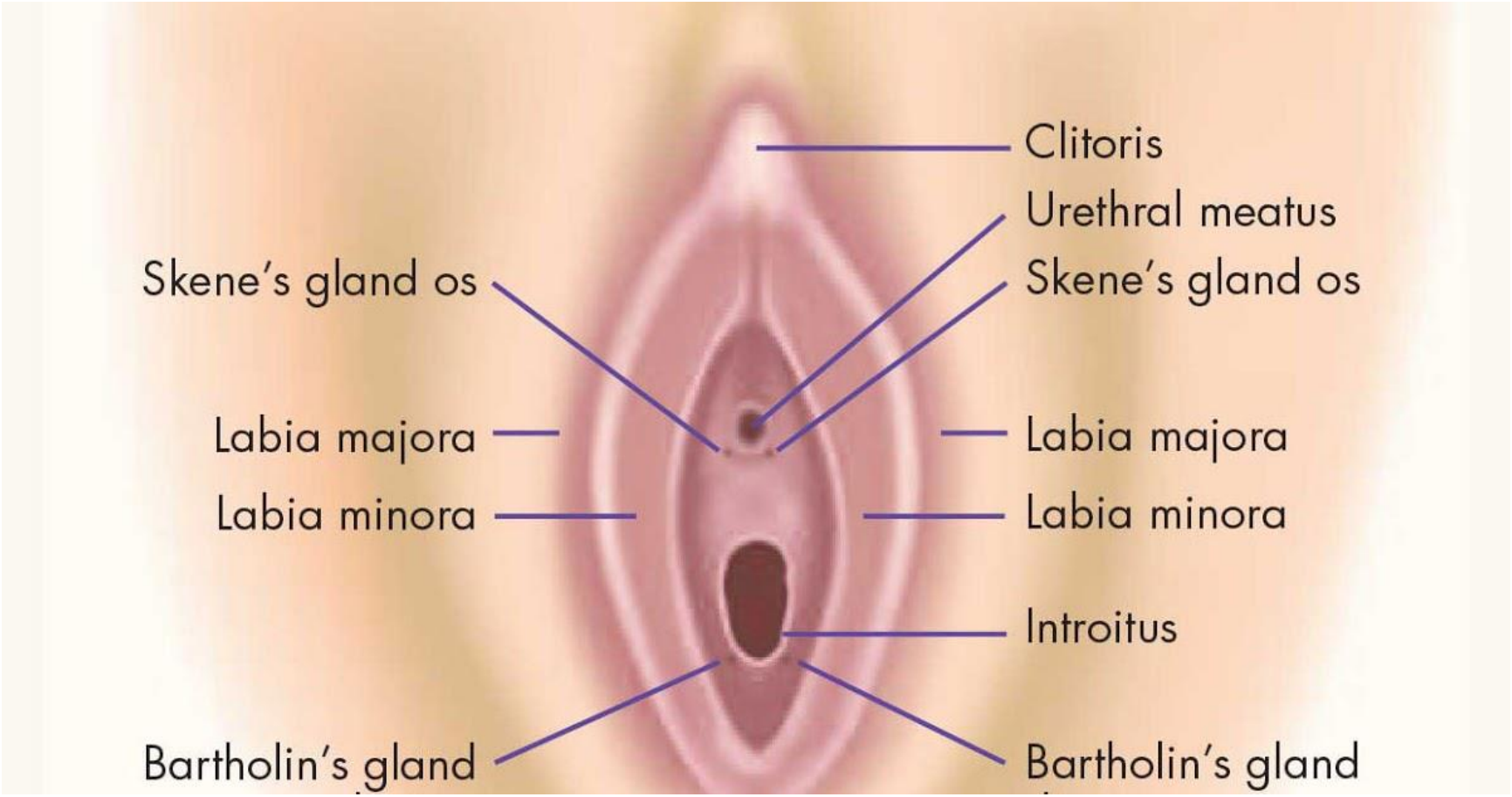
# Urinary Bladder and Urethra

## Female




Clitoris
Urethral orfice
Labia minora
Vestibule
Bartholin's glands
© teachmeanatomy

- **The distal end of the urethra is marked by the presence of two mucous glands that lie either side of the urethra – Skene's glands. They are homologous to the male prostate.**
- **The female urethra is easily dilatable, and catheters or cystoscopes can be easily passed through it.**


Clitoris
Urethral meatus
Skene's gland os
Skene's gland os
Labia majora
Labia majora
Labia minora
Labia minora
Introitus
Bartholin's gland
Bartholin's gland

**Blood supply- internal pudendal arteries, the vaginal arteries and inferior vesical branches of the vaginal arteries.**

- **Venous drainage is given by veins of the same names.**

**Nerve supply- from the vesical plexus and the pudendal nerve. Visceral afferents from the urethra run in the pelvic splanchnic nerves.**

**Lymphatic Drainage**

- **proximal urethra- internal iliac nodes**
- **distal urethra- superficial inguinal lymph nodes.**

- The Urogenital diaphragm is a superficial muscular membrane that separates the deep perineal sac from the upper pelvis.
- The urogenital diaphragm is a triangle shaped muscle layer created by sphincter urethrae along with deep transverse perineal muscles. They are confined among a superior as well as an inferior layer of fascia of the urogenital diaphragm. The inferior layer of fascia is often called as the perineal membrane.

- **Anteriorly**, the two layers of fascia merge, leaving behind a small space beneath the symphysis pubis.
- **Posteriorly**, the two layers of fascia fuse with each other as well as with the membranous layer of the superficial fascia along with the perineal body.
- **Laterally**, the layers of fascia are connected to the pubic arch.
- The confined space which is enclosed among the superficial and deep layer of fascia is called the **deep perineal pouch**.

- On the deeper part it is wrapped by a thin layer of endopelvic fascia referred to as **superior fascia** of the urogenital diaphragm, and on the superficial part it is enveloped by the perineal membrane named **inferior fascia** of the urogenital diaphragm. It is perforated by the **urethra** in male and via the urethra and **vagina** in female, and also consists of bulbourethral glands inside it in male. This triangular diaphragm holds the urogenital triangle with its top behind the **pubic symphysis** along with its sides connected to the ischiopubic rami.

- **COMPOSITION-**It has two **fasciae** called
- Inferior layer of the diaphragm or the perineal membrane.
- Superior layer of the diaphragm.