

وسهلا



أهلا

يُمنع أخذ السلايدات بدون  
إذن المحرر واي اجراء  
يخالف ذلك يقع تحت طائلة  
المسؤولية القانونية  
جميع المعلومات للاستخدام  
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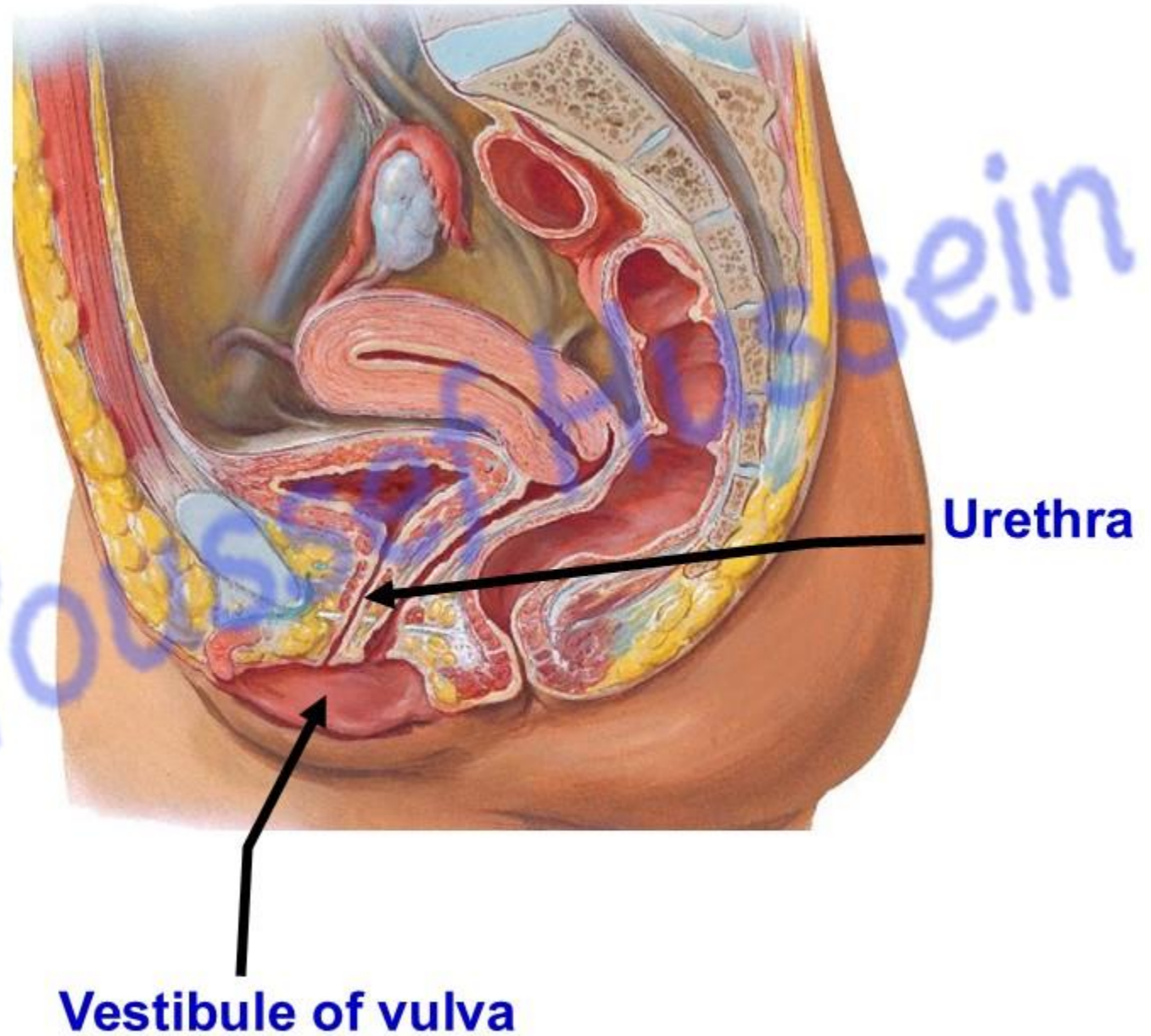
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# Anatomy of Female urethra

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### • Female Urethra

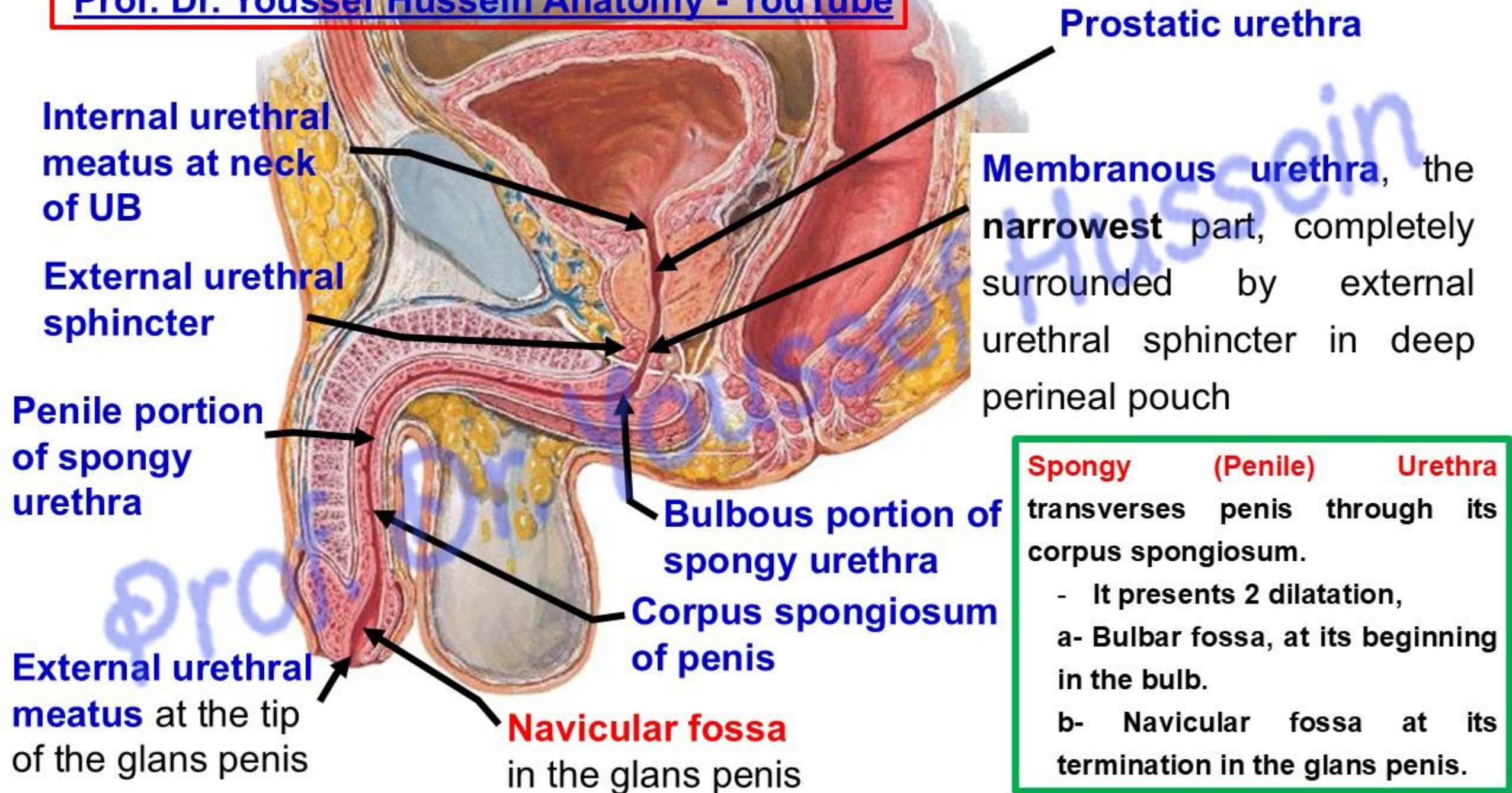
- The female urethra is very short, **about 4 cm long**.
- **It begins** from internal urethral orifice in the neck of urinary bladder.
- **It ends** by external urethral orifice into the vestibule.
- It is surrounded by internal **urethral sphincter** (smooth muscle) and **external urethral sphincter** (striated muscle).

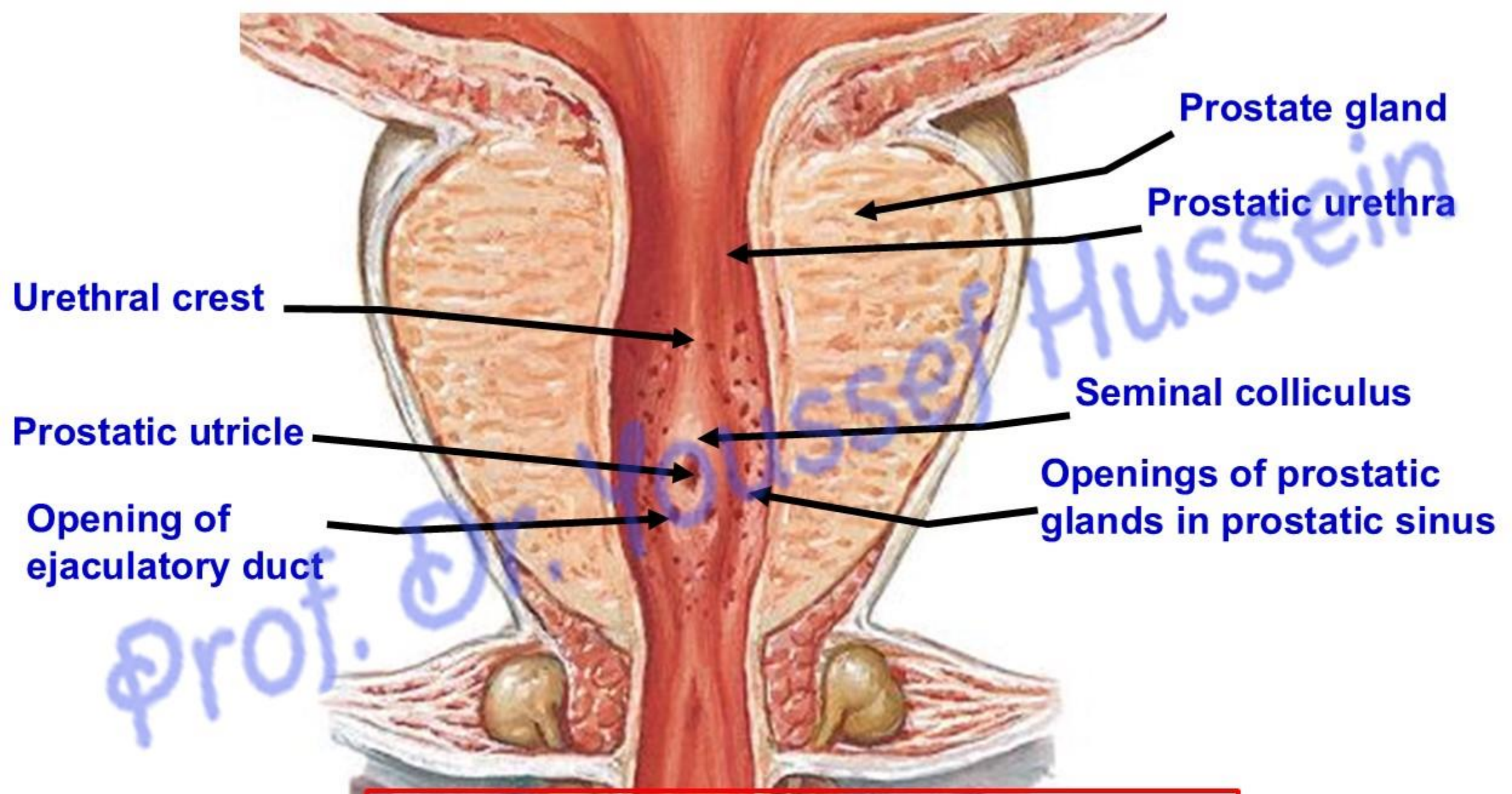


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# Anatomy of Male urethra

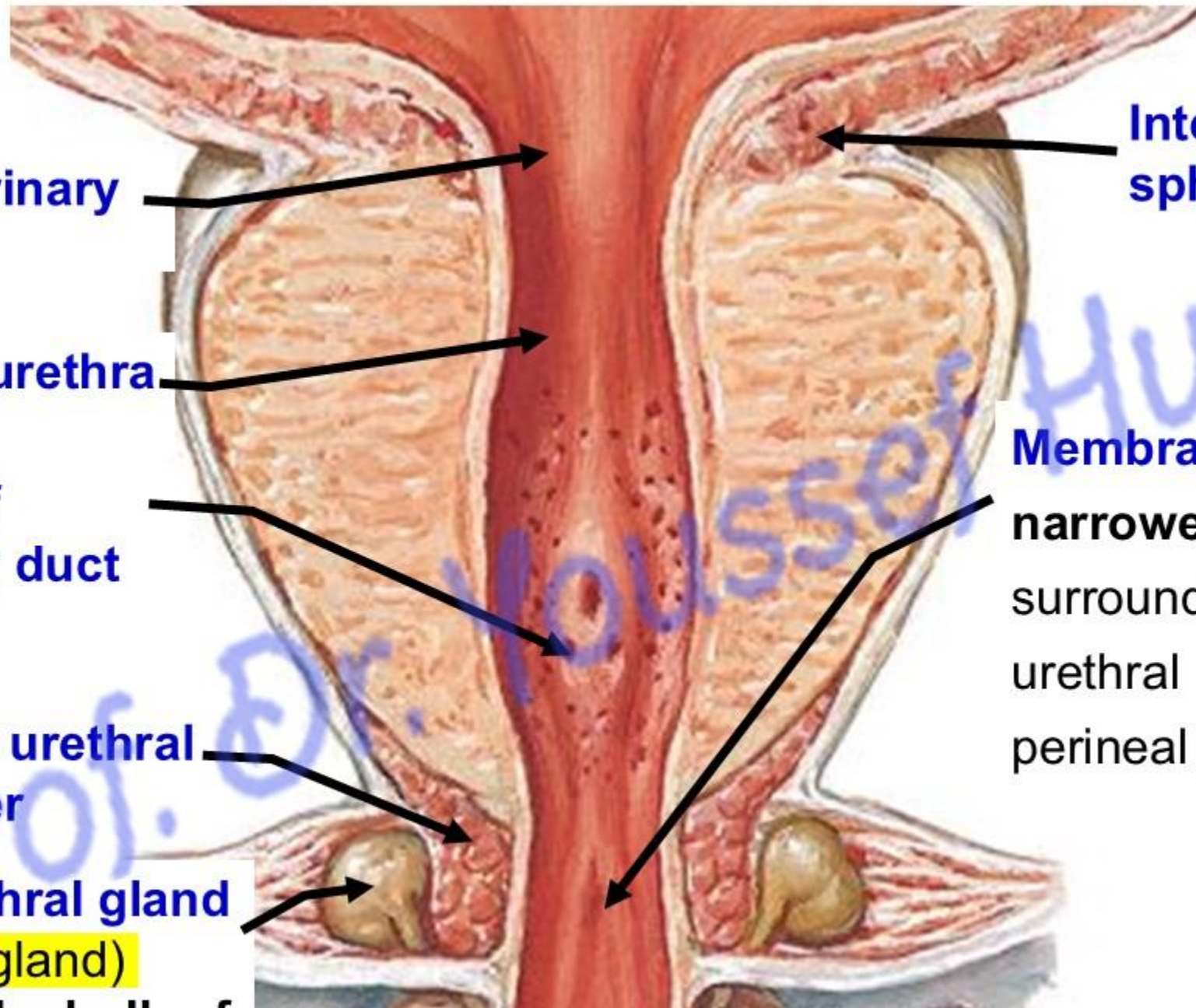
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## • **Prostatic Urethra**

- It pierces the base of the prostate and exits from its apex.
- It is the widest part of the male urethra.
- It lies nearer the anterior surfaces of the prostate.
- **The posterior wall** presents several features.
  - 1- Urethral crest**, a median longitudinal elevation.
  - 2- Prostatic sinuses**, shallow grooves around the urethral crest receiving the opening of the **prostatic glands**.
  - 3- Seminal colliculus** is a swelling in the middle of the urethral crest showing **3 openings**;
    - a- Opening of the **prostatic utricle** (*resemble uterus in female*).
      - It is a blind sac directed upward and backward .
    - b- 2 lateral openings of the **ejaculatory ducts**.



Neck of urinary bladder

Prostatic urethra

Opening of ejaculatory duct

External urethral sphincter

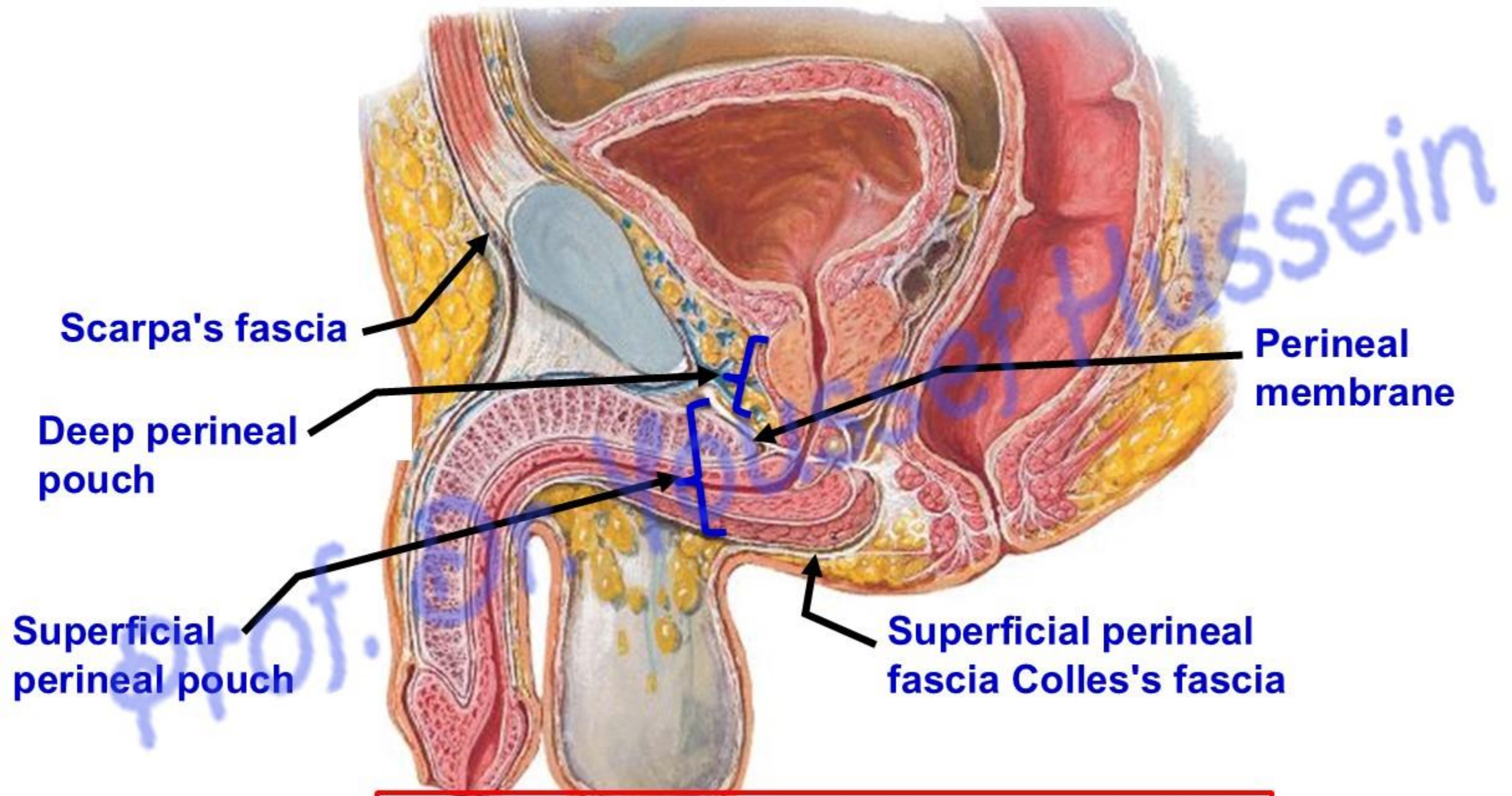
Bulbourethral gland (Cooper's gland) opens in the bulb of the penis

Internal urethral sphincter

Membranous urethra, the narrowest part, completely surrounded by external urethral sphincter in deep perineal pouch

## Urethral sphincters

Internal urethral sphincter	External urethral sphincter
It <b>surrounds</b> neck of the bladder and prostatic urethra above the opening of the ejaculatory ducts.	It <b>surrounds</b> membranous urethra in the deep perineal pouch
<b>Smooth</b> muscle fibers	<b>Striated</b> muscle fibers
<b>Involuntary</b>	<b>Voluntary</b>
Supplied by <b>autonomic</b> fibers	Supplied by the <b>pudendal</b> nerve
<b>Prevent reflux</b> of seminal fluid into urinary bladder during ejaculation	Control the urine



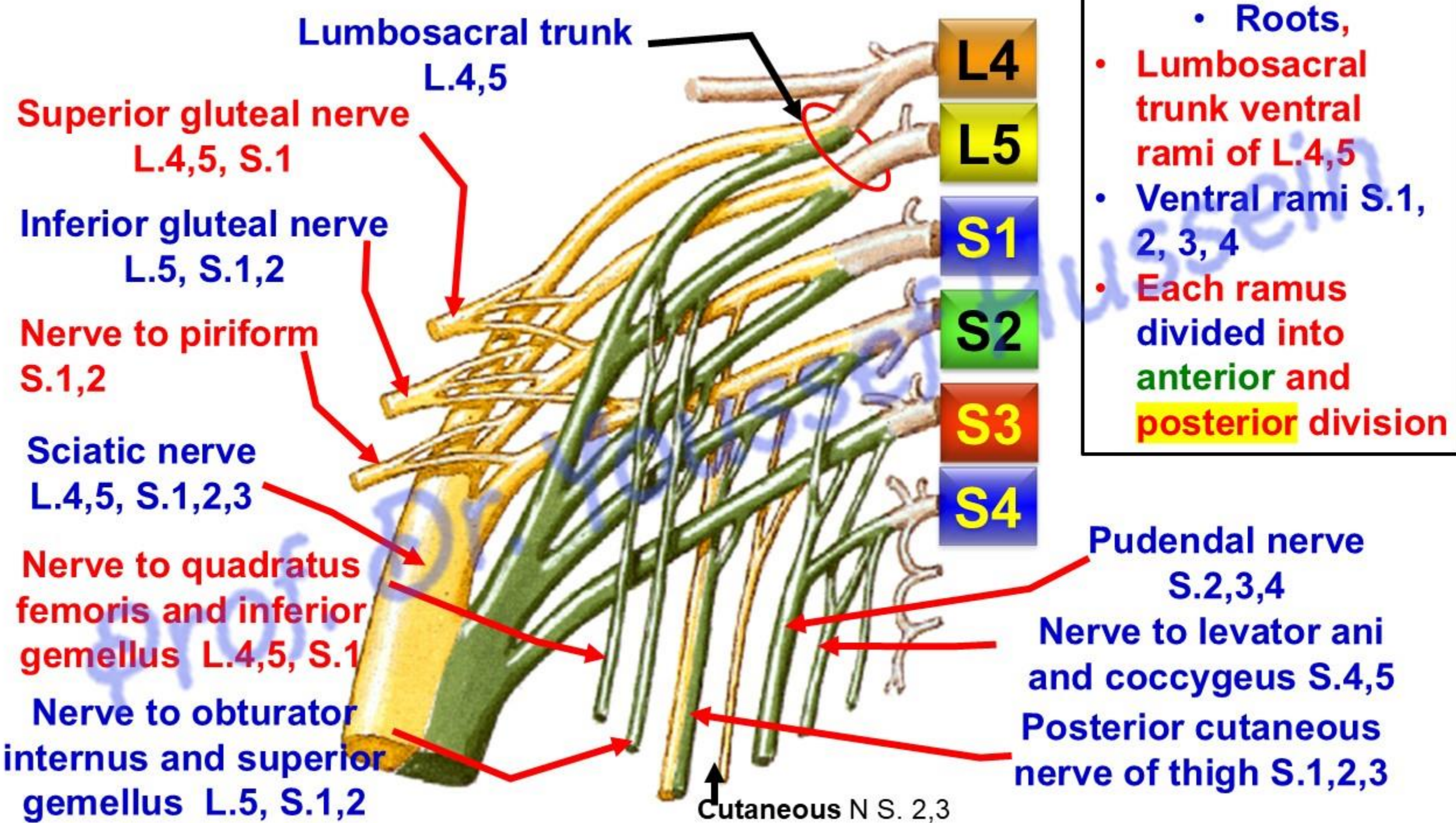
- **Extravasated urine**

- **Rupture of the bulbous portion of the spongy urethra** below the urogenital diaphragm (perineal membrane); The urine may pass into the superficial perineal pouch then
  - ❖ **Inferiorly** spread into the scrotum
  - ❖ **Anteriorly** spread around the penis
  - ❖ **Posteriorly** cannot spread into anal region (ischiorectal fossa) because perineal membrane and superficial perineal fascia (Colles's fascia) are continuous together.
  - ❖ **Superiorly** spread into the lower part of the anterior abdominal wall. The urine cannot spread into the thigh because Deep membranous layer of anterior abdominal wall (**Scarpa's fascia**) are connected with the deep fascia of the thigh (fascia lata) just below the inguinal ligament.
- **Rupture of membranous part of the urethra**, urine escapes into the deep perineal pouch and can extravasate **upward** around the prostate and urinary bladder or **downward** into superficial perineal space.



# Sacral plexus

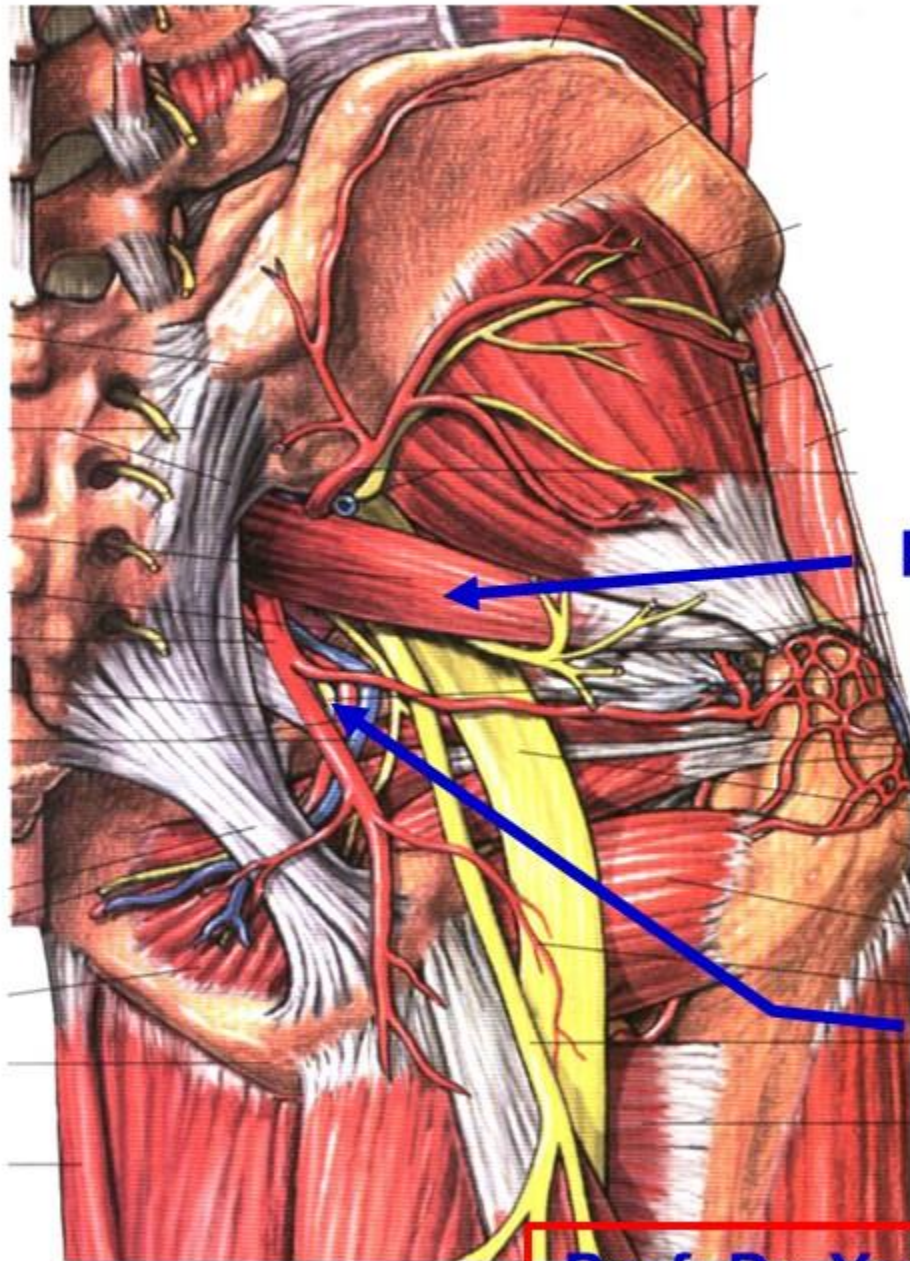
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# Pudendal Nerve

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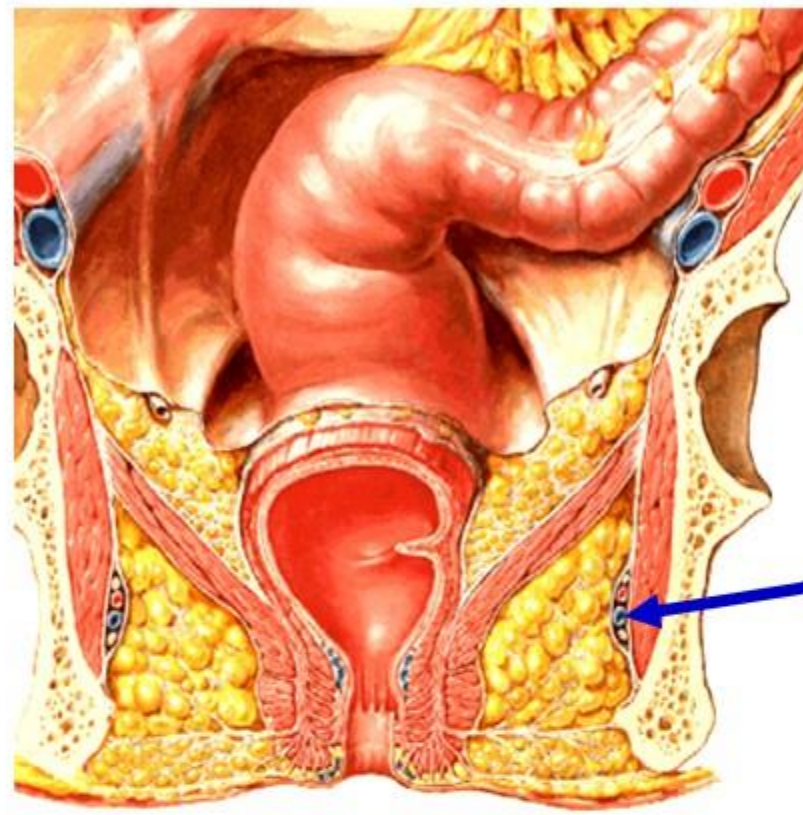
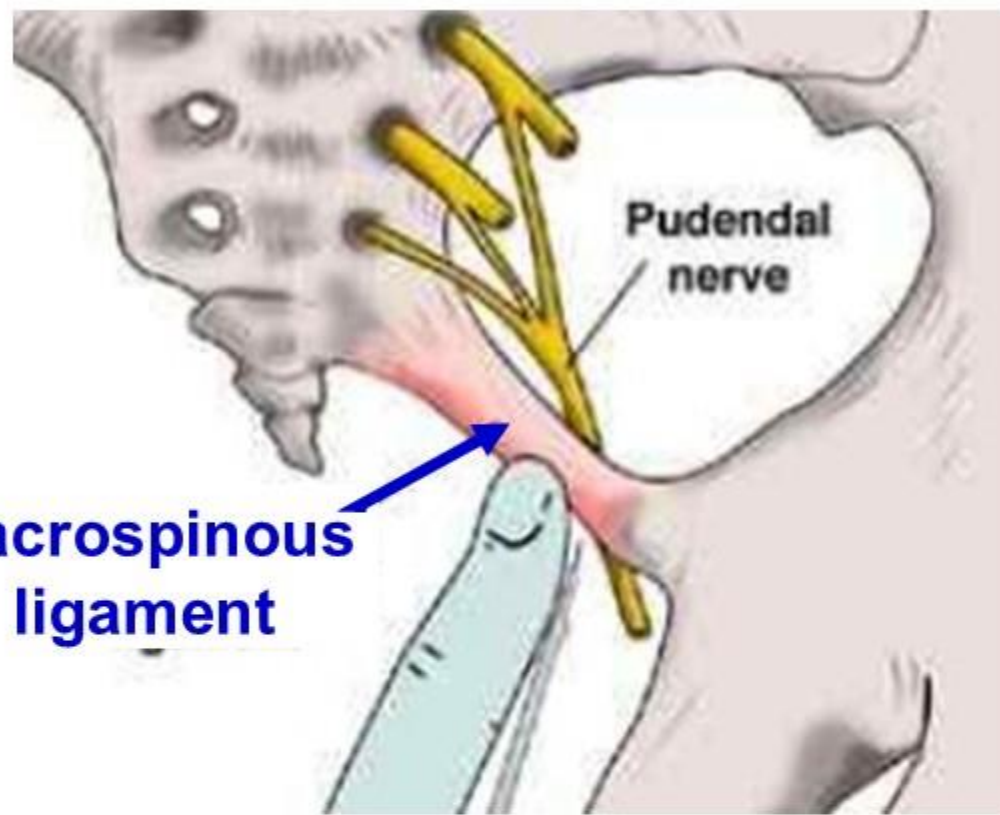


**Piriformis  
muscle**

**Pudendal Nerve**

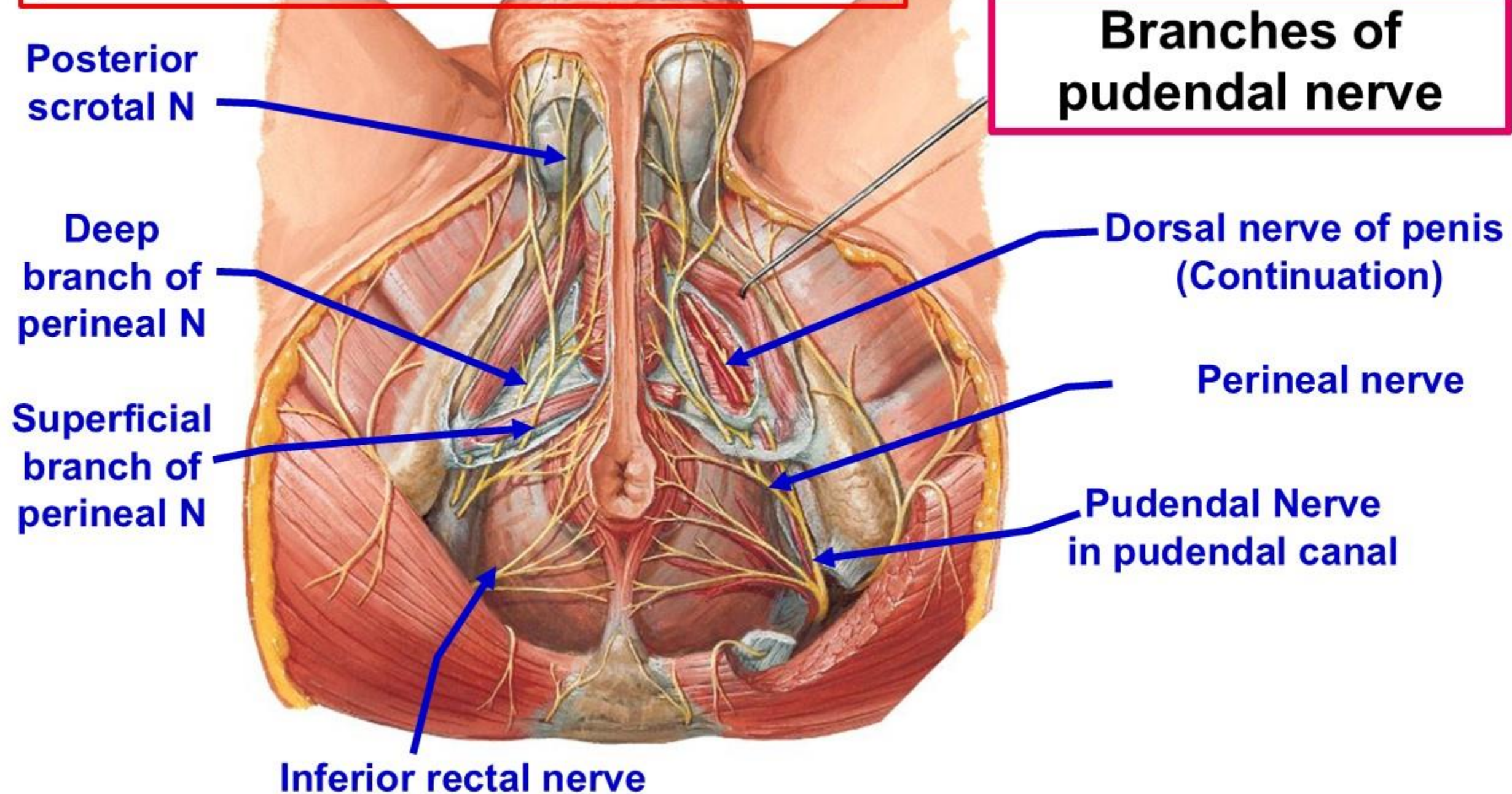
## **Pudendal Nerve**

- **Origin, sacral plexus**, from anterior division of ventral rami of **S 2, 3, 4**.
- **Course** :
  - It passes through greater sciatic foramen below the piriformis muscle to the gluteal region deep to gluteus maximus.



### **Pudendal Nerve (S 2, 3, 4)**

- Then, It crosses sacrospinous ligament close to its attachment to tip of the ischial spine to re-enter the pelvis through the lesser sciatic foramen
- Then passes in pudendal canal with internal pudendal vessel.



**Ischiocavernosus M**

**Superficial  
transverse perineal  
M**

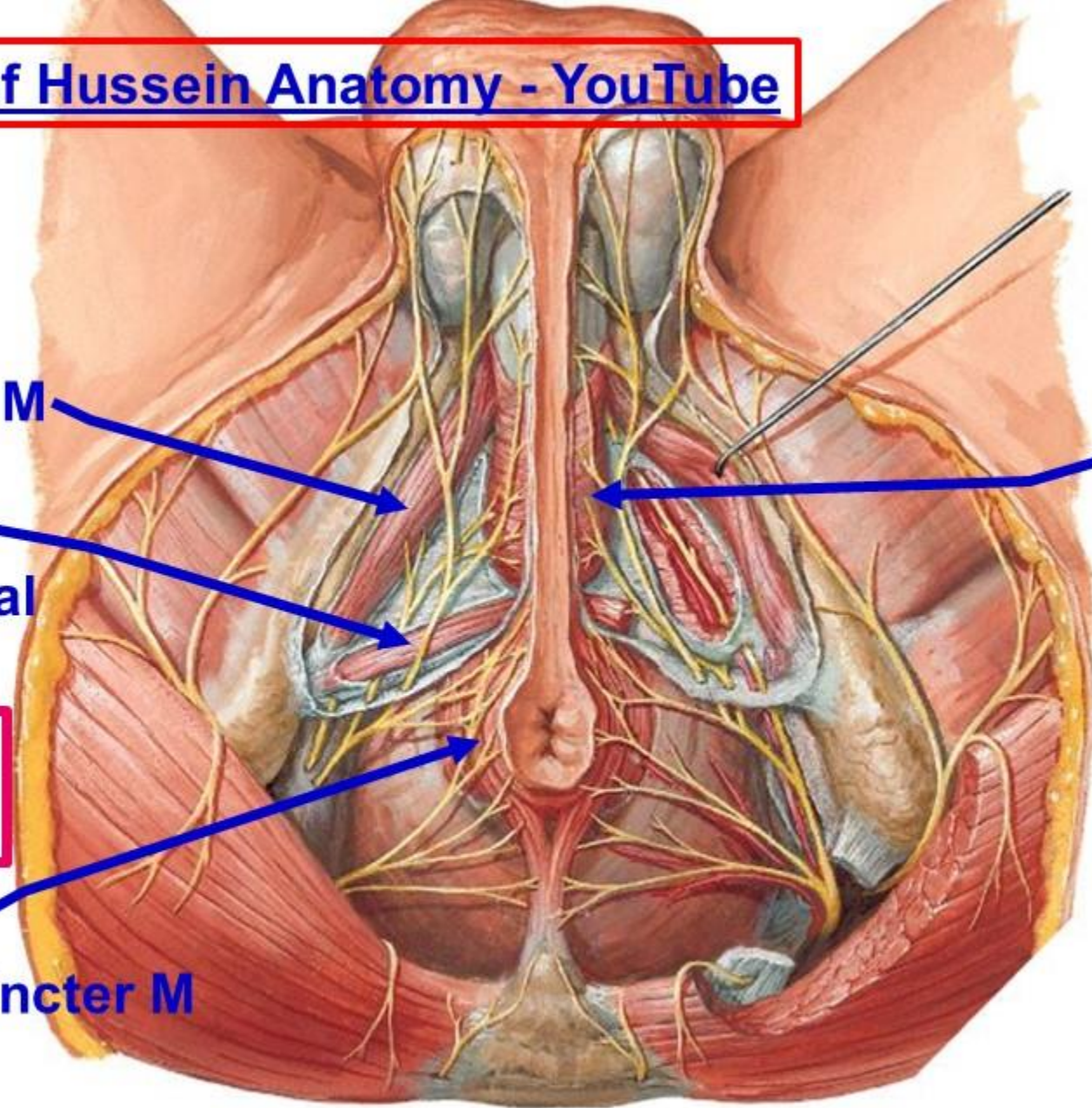
**Deep transverse  
perineal M**

**External anal sphincter M**

**External urethral sphincter M**

**Bulbospongiosus M**

**Levator ani M**



## **\*\* Branches of pudendal nerve:**

**1. Inferior rectal nerve:** arises inside pudendal canal and crosses the ischiorectal fossa to supply Levator ani and External anal sphincter.

- It gives sensation to lower part of anal canal and perianal skin

**2. Perineal nerve:** arises inside the pudendal canal.

**A- Deep branch: Muscular branches** to levator ani and all perineal muscles (Bulbospongiosus, ischiocavernosus, External urethral sphincter, superficial and deep transverse perineal muscles).

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**B- Superficial: (sensory) Posterior scrotal or labial nerves,** Sensory to perineum, scrotum (male) or labia majora and minora (female).

**3. Dorsal nerve of penis or clitoris (sensory) its continuation.**

- It provides voluntary control of fecal and urinary continence
- It carries sensation from external genitalia, skin around anus and perineum

## Clinical notes

### Pudendal nerve block

- It is formed during vaginal childbirth, episiotomy and other minor vaginal procedures
- The patient in lithotomy position and ischial spine is palpated transvaginal
- Local anesthesia is injected in the tissue around the ischial spine.
- The procedure is done on the opposite side.
- As the pudendal nerve is accompanied with **internal pudendal artery**, it is essential to aspirate before injecting local anesthesia, to avoid administration of local anesthesia to the systemic circulation

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