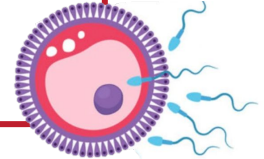


Male reproductive system

Reproductive block-Anatomy-Lecture

[Editing file](#)
[Summary file](#)



Color index:

- Girls' slides
- Boys' slides
- Main content
- Extra
- important
- Drs' notes



Objectives

At the end of the lecture, students should be able to describe the:

- **List the different components of the male reproductive system.**
- **Describe the anatomy of the primary and the secondary sex organs regarding: (location, function, structure, blood supply & lymphatic drainage).**
- **Describe the anatomy of the male external genital organs.**

Components of the Male Reproductive System



It Divided into

Primary sex organ

First: **Testis**

Factory (المصنع)

Reproductive tract

Second: **Epididymis**
(جدار الخصية)

Third: **Vas Deferens**
(or ductus deferens)

Spermatic Cord
(Vas deferens is inside it)

Accessory sex glands

Fourth: **Seminal Vesicles**

Fifth: **Prostate Gland**

Sixth: **Bulbourethral Glands**

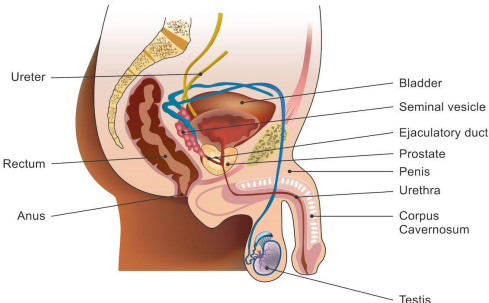
External genitalia

Seventh: **Penis**

Functions

1. Secretion of seminal fluid.
2. Nourishing, activation of sperms.
3. Protection of sperms.

قنوات توصيل



First: Testes

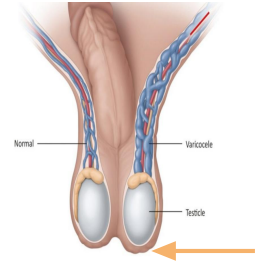
Testes: Scrotum

(كيس الصفن)

- An outpouching of loose skin and superficial fascia.
- The **left scrotum** is slightly lower than the right. (because the sigmoid colon compress the left testicular vein so left testes descend down ,and that's why varicose vein appear first in the left side)

Functions:

1. Houses and protects the testis.
2. Regulates testicular temperature (**no testicular -superficial - fat**).
3. It has thin skin with sparse hair and sweat glands.
4. **The Dartos muscle** lies within the superficial fascia and replaces **Scarpa's fascia** of the anterior abdominal wall. (In cold weather the skin of the scrotum shrinks upward , & In hot weather the muscle relaxes and the Scrotum descend downward)



Testes: Shape

- Paired almond-shape gonads
- suspended in the scrotum by the **spermatic cord**
- Testis or Testicle (**singular**), Testes (**plural**).
- **Its volume is about 20-25 ml.**
- length 4-5 cm. ·Weight 10.5-14 gm.

Testes: Coverings

1

• Tunica Vginalis:

(غطاء يغطي الخصية)

- Peritoneal covering formed of parietal and visceral layers.
- It surrounds the testis and epididymis.
- It **allows free movement of testis inside the scrotum.**

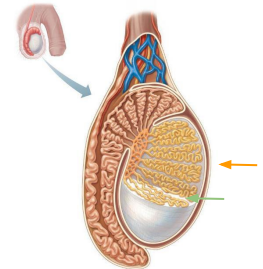
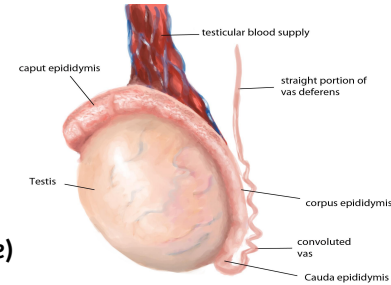
Testes: Functions

1. **Spermatogenesis** sperm production
2. **Hormone production** (Androgens=Testosterone)

2

• Tunica Albuginea:

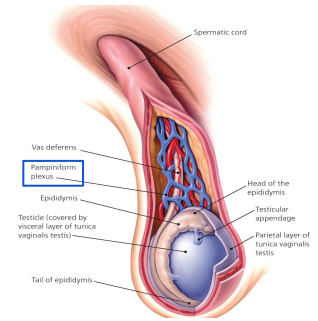
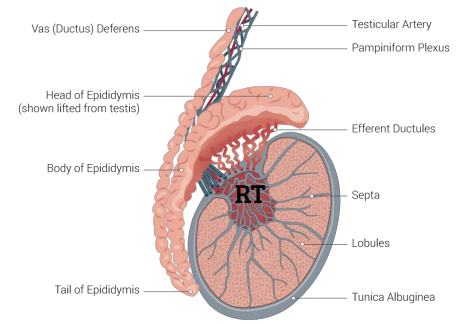
- It is a whitish fibrous capsule.



First: Testes cont.

Testes: Internal Structures

- **Fibrous septae:** extend from the capsule, dividing the testis into 200-300 **lobules** (average 250) and in infants it's below 200 lobule
- **lobules:** Each lobule contains 1-3 **Seminiferous Tubules** (each is 60cm coiled tubule)
Seminiferous = شبيه النفرون
- **Seminiferous Tubules:**
 - They are the site of spermatogenesis. **sperms** مصنع ال
 - They form the bulk of the testicular tissue.
 - In between the seminiferous tubules lies the **Interstitial cells of Leydig** which secretes **Testosterone** hormone.
- **Rete testis:**
 - A network of tubules. **نقطة اتصال**
 - It is the site of merging of the seminiferous tubules.



Testes: Supply

Arterial supply

- **Testicular Artery**
- it arises from the abdominal aorta at the level of **L3**
- **Direct branch from abdominal aorta**

Venous drainage

- Pampiniform plexus of veins :** About dozen of veins which forms a network in the spermatic cord, they become larger, converge as it approach the inguinal canal and form the **Testicular vein**.
- Right vein drains into **IVC**
 - Left vein drains into **Left renal vein**

Lymphatics drainage



- Testicular Lymphatics** follow arteries and veins of the testis and end in the **Lumbar(paraortic) nodes**. **Testes develop in abdomen** so it will drain the lymphatics **في مكان نشأتها**
- **Scrotum, Penis and Prepuce** terminate in **Superficial inguinal nodes**.
important In case of testicular carcinoma

First: Testes cont.

This slide was canceled by both doctors

Cremasteric Reflex

Indication: Evaluation of Testicular pain in case of (Testicular Torsion).

Technique: Examiner strokes or pinches upper medial thigh. It causes cremasteric muscle contraction which is Supplied by the genital branch of genitofemoral nerve.

Efficacy:

Test sensitivity for Testicular Torsion: 99%.

Assumes age over 30 months(2.5 years)



Observation: rise of the testicle on the same side (normal).

Interpretation:

- Normal: it is present with Epididymitis.
- If cremasteric reflex absent (No testicles rise): it is suggestive of Testicular Torsion.
*Also absent in 50% of boys under the age of 30 months (Do not use this under the age of 30 months).

Cremasteric Reflex

Nerve involved: Genitofemoral (GFN) from (L1, L2).
it's a reflex thus has an afferent fibers, center and efferent fibers

- Sensory(afferent) :
 - Femoral branch of (GFN)
 - Ilioinguinal.
- Center : L1 ,L2
- Motor (efferent): Genital branch of (GFN)



Second: Epididymis

Shape and Location

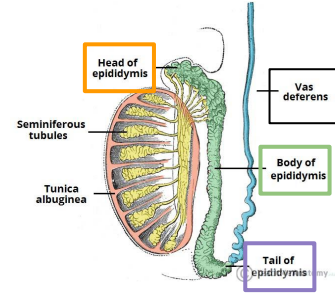
- It is a single **coiled tubule**.
- **6 meters long**.
- Located on the posterior and superior margins of the testis.

Divisions

- 1- **Head**: receives (rete testis) efferent ductules from the testes. (the most expanded part **above** the Testicle)
- 2- **Body**: **behind** the Testicle
- 3- **Tail**: continuous with vas deferens.

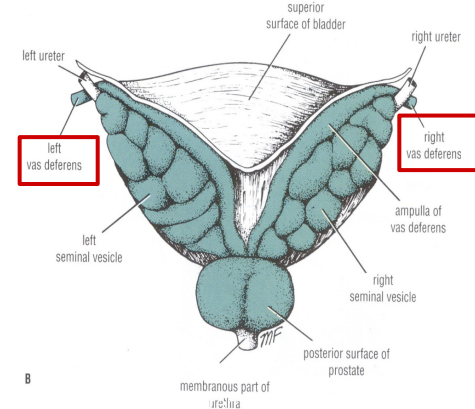
Functions

- 1- Secrete and absorbs the nourishing fluid.
- 2- Recycles damaged spermatozoa.
- 3- Stores spermatozoa **up to 2 weeks to allow for physiological maturation of sperms** it actually stores it up to 20 days not 14 days, اهم مهمة حتى ينضج السبيرم لانه يحتاج الى تقوية



Third: Vas Deferens

- It is a muscular tube about **45 cm long**.
- Carries sperms from the **epididymis** to pelvic cavity.
- Passes through the inguinal canal as one of the contents of the **spermatic cord**.
- It crosses the **lower end** of the ureter.
- Its terminal part is dilated to form the **Ampulla of the vas**. sperms يحدث فيها تجمع للـ
- It joins the urethra in the prostate



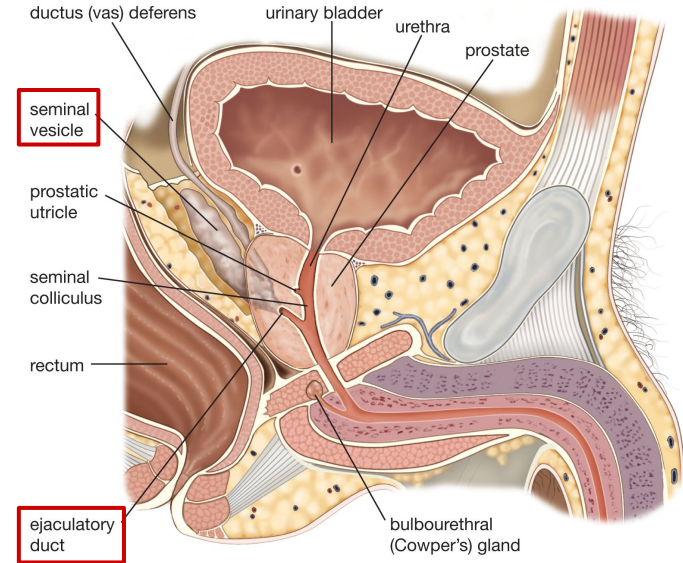
Fourth: Seminal Vesicle & Ejaculatory ducts

Seminal Vesicle الحوصلة المنوية

- Paired elongated glands (SV).
- Located posterior & inferior to the urinary bladder.
- Lies lateral to the vas deferens.
- Secrete 60% of the semen (Seminal fluid). = السائل المنوي

Ejaculatory ducts القنوات القاذفة

- Formed by the union of the lower end of the vas deferens and the duct of the seminal vesicle.
- Its length is about 2.5cm (1 inch)
- The 2 ejaculatory ducts open into the prostatic urethra on both sides of the seminal colliculus.
- They drain the seminal fluid into the prostatic urethra.



Fifth: Prostate gland

Prostate gland: Structure

- The Largest male accessory gland.
- It is a fibromuscular glandular tissue.
- It is a walnut size.

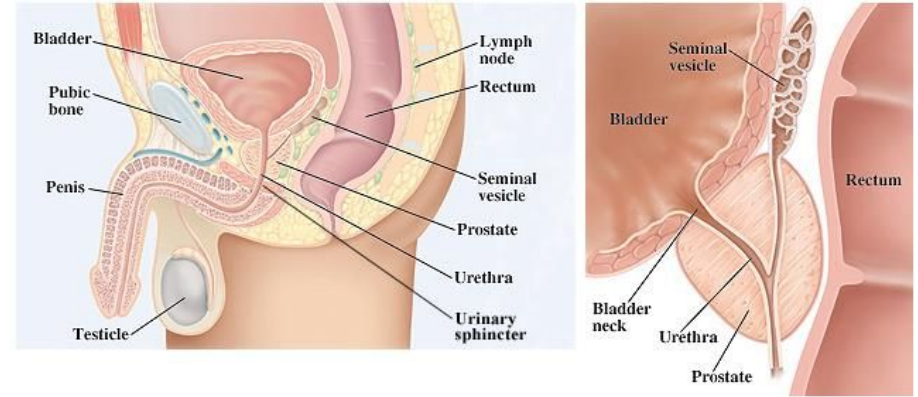
Prostate gland: Location

- It is located at the neck of bladder.
- It is traversed by the prostatic urethra.

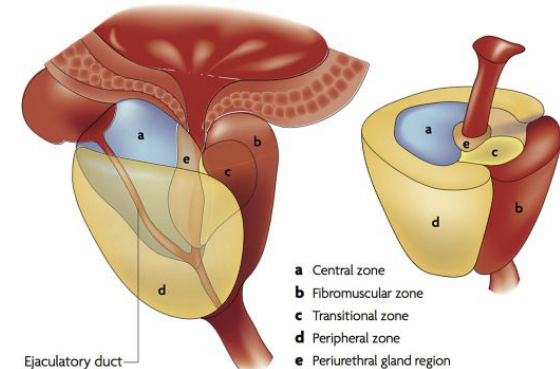
Prostate gland: Shape

Shape: Conical, It has:

- **Base (Superior):** Attached to neck of urinary bladder.
- **Apex (Inferior):** rests on the Urogenital diaphragm.
- **Four Surfaces:**
 - Anterior
 - Posterior
 - 2 lateral (Right & Left) surfaces.



Prostate zones



Fifth: Prostate gland

Prostate gland: Functions

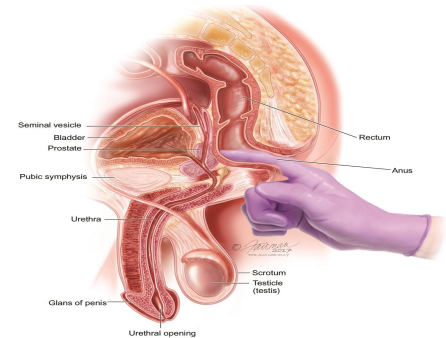
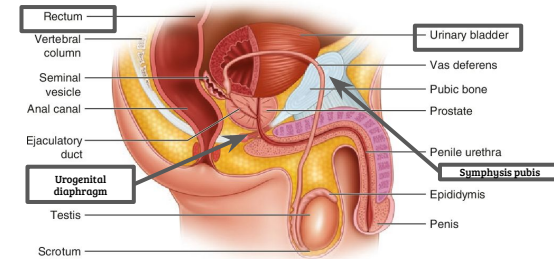
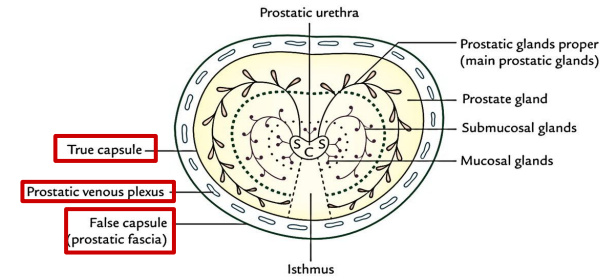
- It secretes enzymes which has the following functions:
 1. Aid in activating sperm motility.
 2. Mucus degradation.
 3. Neutralize the acidity of female reproductive tract (**Alkaline fluid**).
عشان تعيش الحيوانات المنوية في بيئة متعادلة لانها لا تتحمل الحامضية
 4. Antibiotic
- It secretes (20-30% of seminal fluid.) **remember in seminal vesicle was secretion of 60% of seminal fluid**
- Houses prostatic urethra

Prostate gland: Capsule

- **Internally:** it has a dense fibrous capsule (**prostatic\true capsule**)
- **Externally:** surrounded from outside by a **fibrous prostatic sheath**(false capsule)which is continuous with the puboprostatic ligament part of the levator ani muscle, (levator prostate).
- In between the prostatic capsule and the prostatic fibrous sheath lies the **prostatic venous plexus**.

Prostate gland: Relations

- **Anterior:** Symphysis pubis (SP).
- **Superior:** Neck of the bladder.
- **Posterior:** Rectum (**important for PR examination**)
- **Inferior:** Urogenital diaphragm (UGD)
- **Lateral:** Medial margins of levator ani muscles (levator prostate)



Fifth: Prostate gland

Prostate gland: Lobes

- Anatomically divided into 5 lobes according to their relation to the urethra
- Urologists & Sonographers, divide the prostate into Peripheral and Central (Internal) zones represented by the middle lobe
- Within each lobe are four lobules, which are defined by the ducts and connective tissue

01

- **Anterior lobe (isthmus):**
 - Lies anterior to the urethra.
 - Fibromuscular.
 - has **no** glandular tissue

02

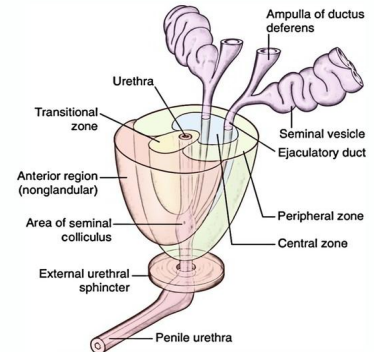
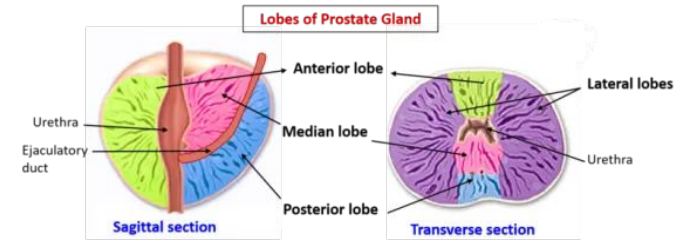
- **Posterior lobe (correspond to peripheral zone):**
 - Posterior to the urethra and inferior to the ejaculatory ducts.

03

- **Two lateral lobes:**
 - On each side of urethra.
 - **Rich in glandular tissue.** مهمة

04

- **Middle (median):**
 - Represented by The Central zone
 - Between the urethra and ejaculatory ducts & closely related to neck of urinary bladder.
 - Usually it projects into lumen of the urinary bladder distorting the internal urethral sphincter, after the age of 40 years, (Benign Prostatic Hyperplasia).
 - **Rich in glandular tissue.** مهمة



Fifth: Prostate gland cont.

Prostate gland: supply

Arterial supply

- **Inferior vesical artery from internal iliac artery.**

Venous drainage

Prostatic venous plexus.

- Lies between **prostatic fibrous capsule** and **prostatic sheath**.
- Drains into the internal iliac veins.
- Continuous **superiorly** with the vesical venous plexus of the urinary bladder. continuous **posteriorly** to the internal vertebral venous plexus Within the vertebral canal (in case of prostate cancer it could metastasis to vertebral column and the brain)

Lymphatics drainage

- **Internal iliac lymph nodes.**

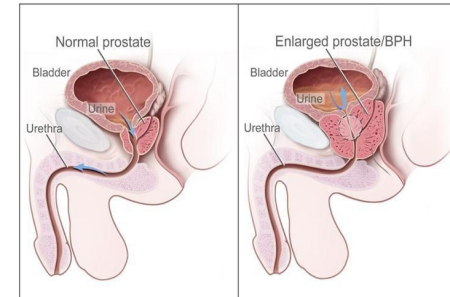
Prostate gland: Clinical relation

Benign: Hypertrophy of the Prostate

- Common after **middle** age.
- An enlarged prostate projects into the urinary bladder and distorts the prostatic urethra.
- The middle lobe often enlarges the most and obstructs the internal urethral orifice, this leads to **Nocturia, Dysuria, Frequency and Urgency.**

Malignant: Prostatic carcinoma

- Common after the age of 55.
- Malignant prostate is felt hard & irregular in per-rectal examination, malignant cells metastasize first to internal iliac & sacral lymph nodes later to distant nodes (lymphatic metastasis).
- to bone & brain through internal vertebral venous plexuses. (venous metastasis)
- **Can cause obstruction to urine flow because of its close relationship to the prostatic urethra.**



Fifth: Prostate gland cont.

Prostate gland: Prostatic Urethra

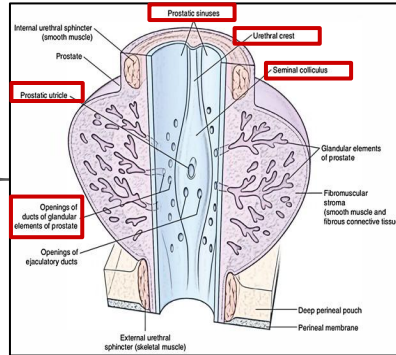
The following structures are seen on the posterior wall of the prostatic urethra:

Urethral crest:

- A longitudinal elevated ridge.

Prostatic sinus:

- A groove on each side of the crest.
- **The prostatic gland opens into the prostatic sinus.**



Seminal colliculus:

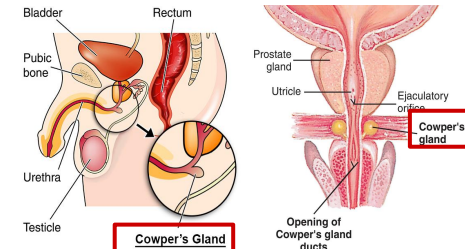
- **A rounded eminence that opens into the prostatic utricle.**

Prostatic utricle:

- A depression on the summit of the urethral crest.
- The ejaculatory ducts open on the sides of the utricle

Sixth: Bulbourethral Cowper's Gland

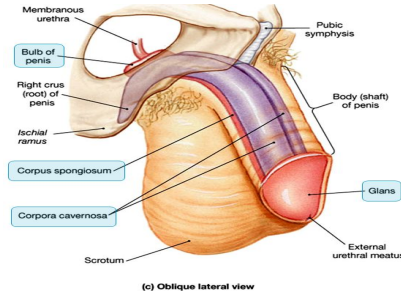
- Small paired glands.
- Located at the base of the penis. (**opens in the penile urethra**)
- Secrete alkaline mucus for:
 - Neutralization of urinary acids
 - Lubrication.



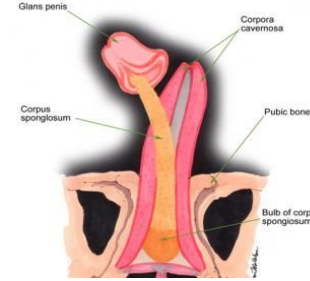
Seventh: Penis

A Copulatory and Excretory organ.

Excretory part:
Penile urethra transmits urine & sperm.

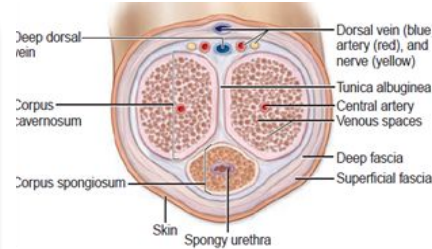


Capulatory part:
Has (3) cylindrical masses of erectile tissue



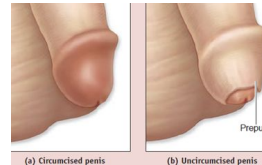
Two Corpora Cavernosa

- Two superior paired (right & left) masses of **(Primary erectile tissue)**.
- Provide the majority of rigidity & length of penis. (**erection**)
- **Their posterior expansions**, forms the 2 Crurae Right crus and left crus which anchor penis to the pelvic bone (anchor tissue) against pelvic bone.



One Corpus Spongiosum

- The **single inferior mass (Secondary erectile tissue)**.
- It is traversed by the penile urethra.
- **Anterior expansion:** forms the Glans penis.
- **Posterior expansion:** forms the bulb of the penis.
- **Prepuce or foreskin:** fold of skin covering glans penis (before circumcision) (if not circumcised it may correlate with cervical cancer in female)



QUIZ

Q1: Where is the body of the epididymis located related to the testes?

- A. Posterior
- B. Anterior
- C. Superior
- D. Inferior

Q2: Which group of the following lymph nodes receive from the testis?

- A. paraortic
- B. Pararectal
- C. Superficial inguinal
- D Deep Inguinal

Q3: The union of the vas deferens and seminal vesicle form the?

- A. epididymis
- B. Ejaculatory duct.
- C. Urethra
- D. Penis

Q4: Which of the following structures allows free movement of the testes

- A. Cremasteric muscle
- B. Tunica albugenia
- C. Tunica vaginalis
- D. Dartos muscle

Q5: which lobe of prostate gland has no glandular tissue

- A. lateral
- B. Anterior
- C. middle
- D. posterior

Q6: which structure will be affected in case of obstruction of internal iliac artery?

- A. penis
- B. testes
- C. Cowper's Gland
- D. prostate gland

Q7: in case of carcinoma of the penis. Cancer cells are likely to metastasize to which one of the following nodes?

- A. paraortic
- B. Pararectal
- C. Superficial inguinal
- D Deep Inguinal

Q8: when you are testing the Cremasteric Reflex in a patient, the normal observation should be

- A. rise of the both testicles
- B. rise of the testicle on the same side
- C. rise of the testicle on the opposite side



Members board

This amazing lecture was originally done
by 438's team

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