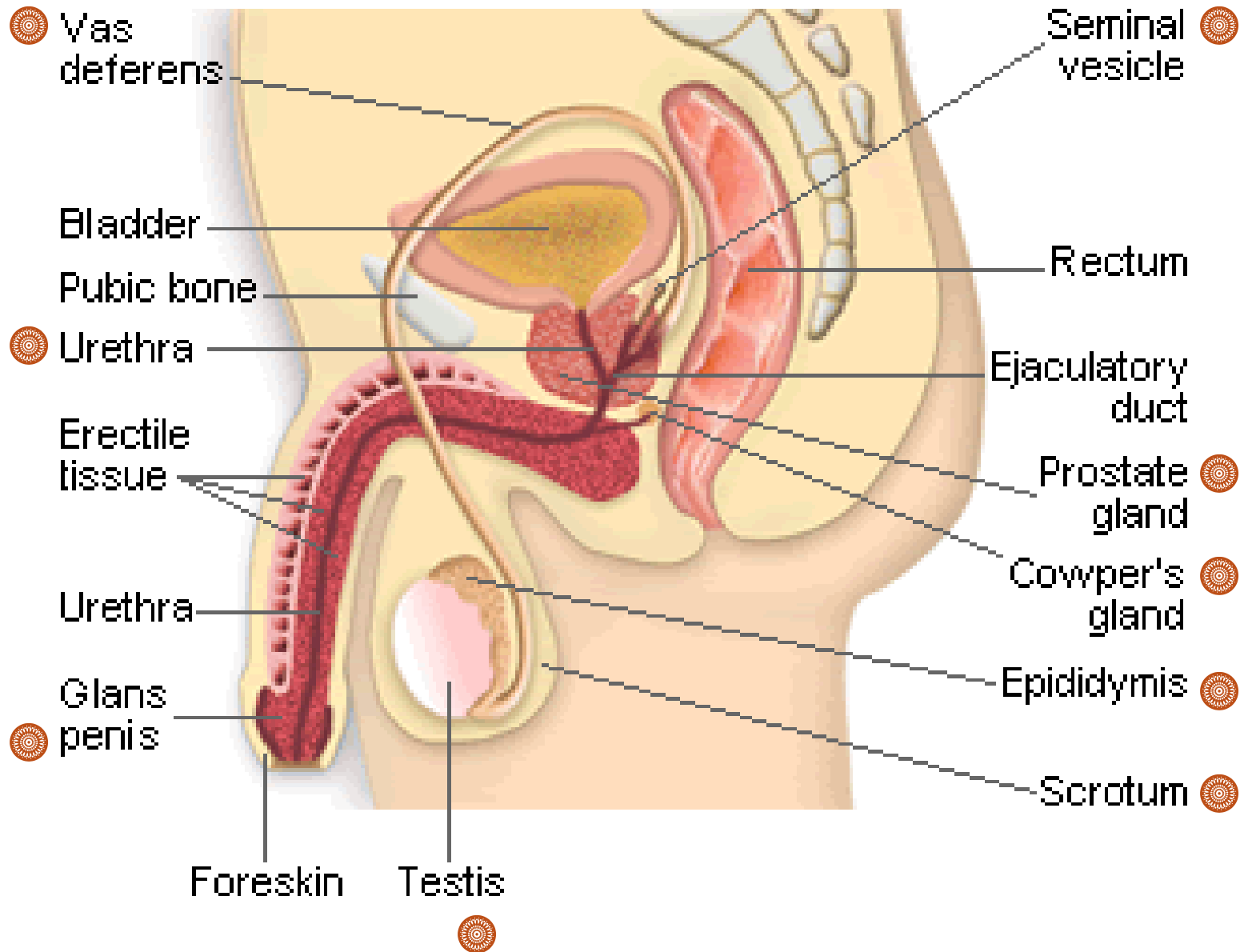


**Male Reproductive
System or Male
genital organs
(*organa genitalia
masculina*)**

ORGANA GENITALIA:

***ORGANA GENITALIA MASCULINA
INTERNA***

***ORGANA GENITALIA MASCULINA
EXTERNA***



ЧОЛОВІЧА СТАТЕВА СИСТЕМА (SYSTEMA GENITALE MASCULINUM)

Внутрішні чоловічі статеві органи (organa genitalia masculina interna)

Яєчко (*testis*)

Над'яєчко (*epididymis*)

Сім'яний канатик
(*funiculus spermaticus*)

Пухирчаста залоза
(*glandula vesiculosa*)

Передміхурова залоза (*prostata*)

Цибулинно-сечівникова залоза
(*glandula bulbourethralis*)

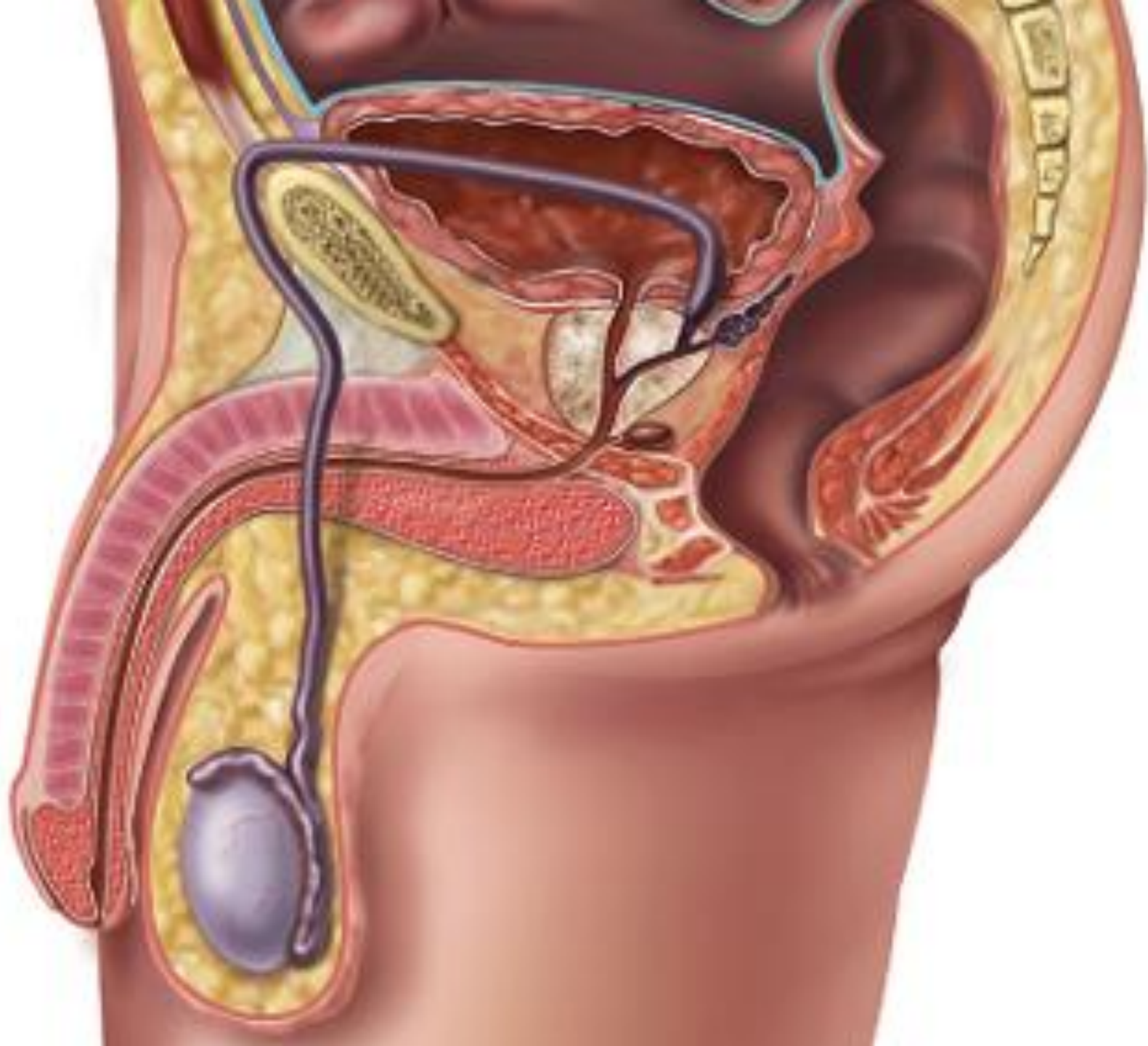
Сім'явиносна протока
(*ductus deferens*)

Зовнішні чоловічі статеві органи (organa genitalia masculina externa)

Статевий член
(*penis*)

Чоловічий сечівник
(*urethra masculina*)

Калитка
(*scrotum*)



ORGANA GENITALIA MASCULINA INTERNA

- ***TESTIS, EPIDIDYMIS***
- ***DUCTUS DEFERENS***
- ***GLANDULAE VESICULOSAE***
- ***PROSTATATA***
- ***GLANDULAE BULBOURETHRALES***
- ***FUNICULUS SPERMATICUS***

ЯЄЧКО
(*TESTIS*)

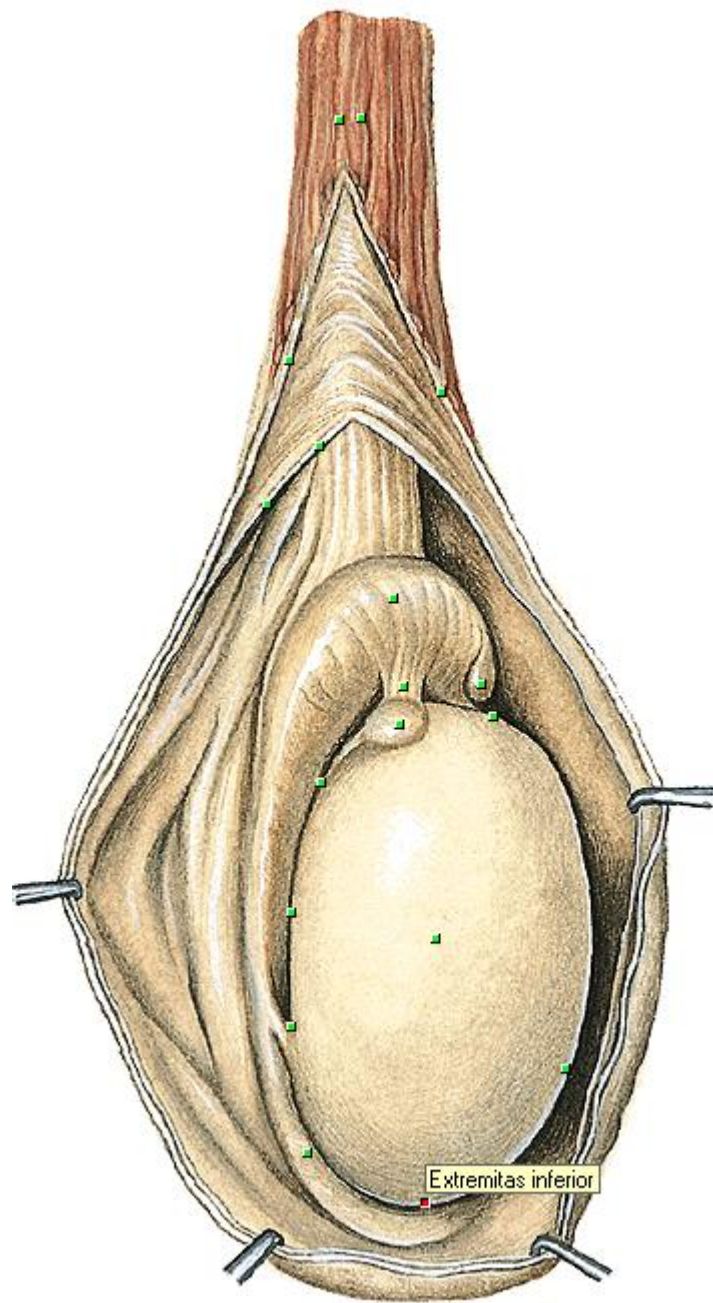
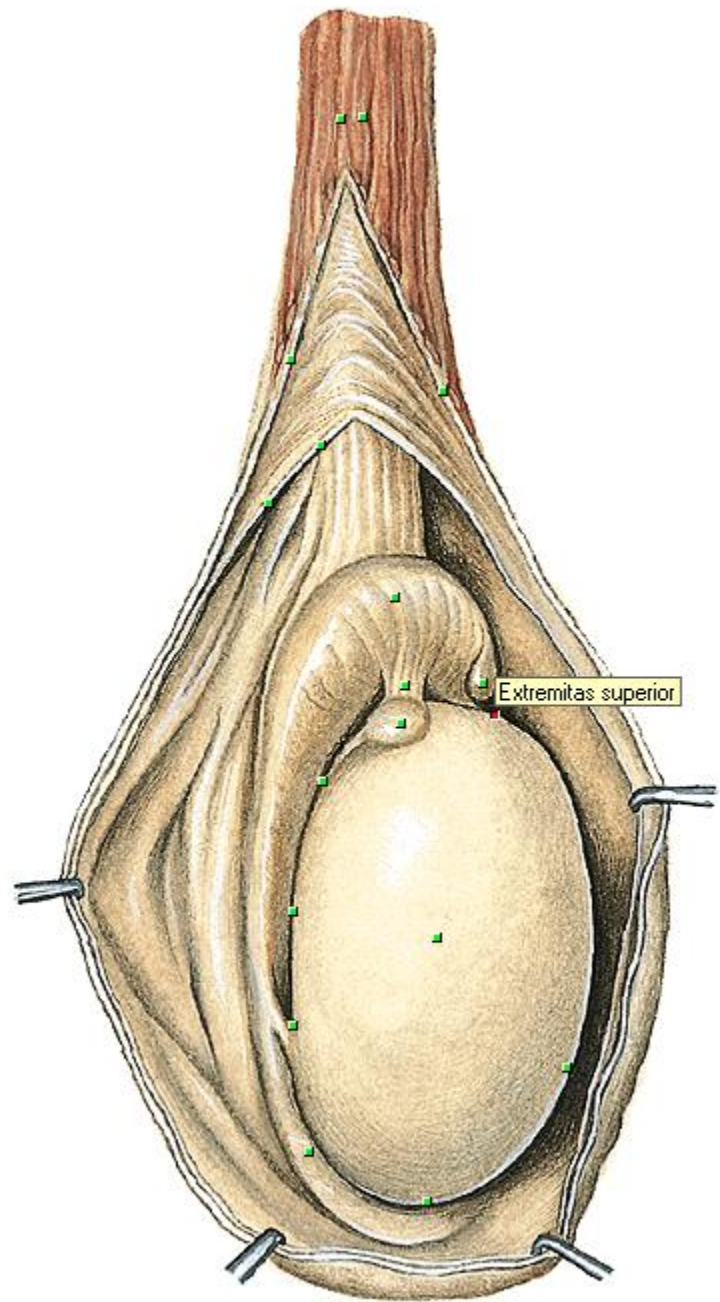
TESTIS (ORCHIS, DIDYMIIS)

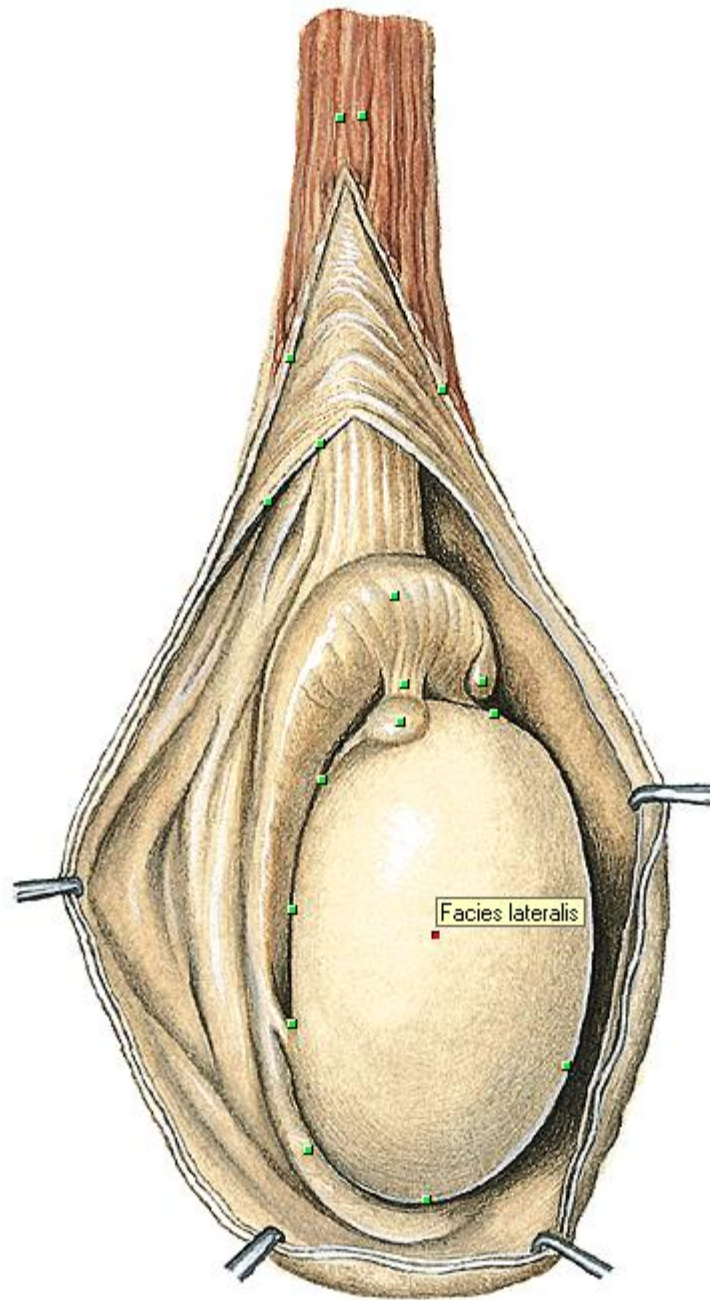


TESTIS

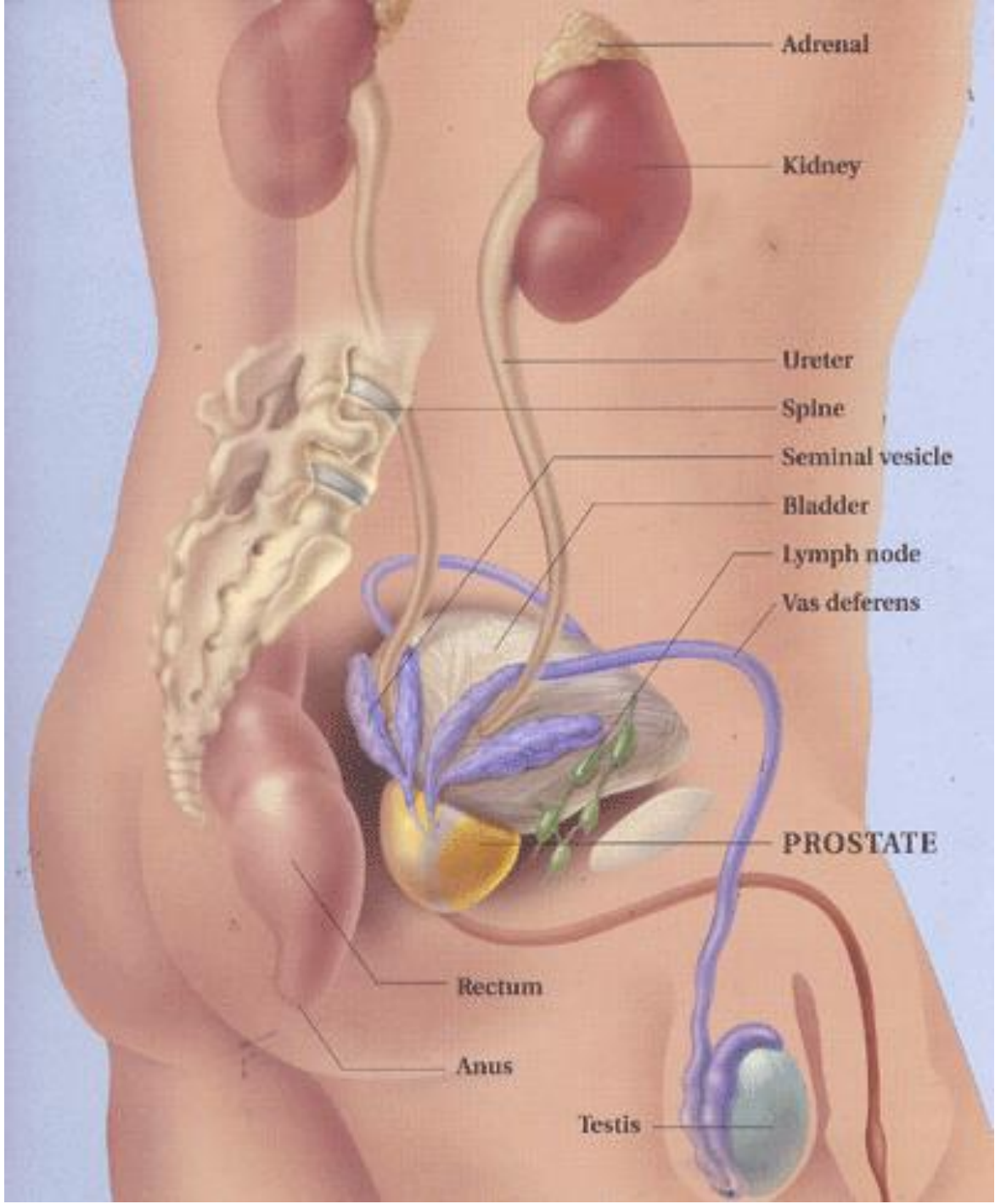
POLUS SUPERIOR
POLUS INFERIOR

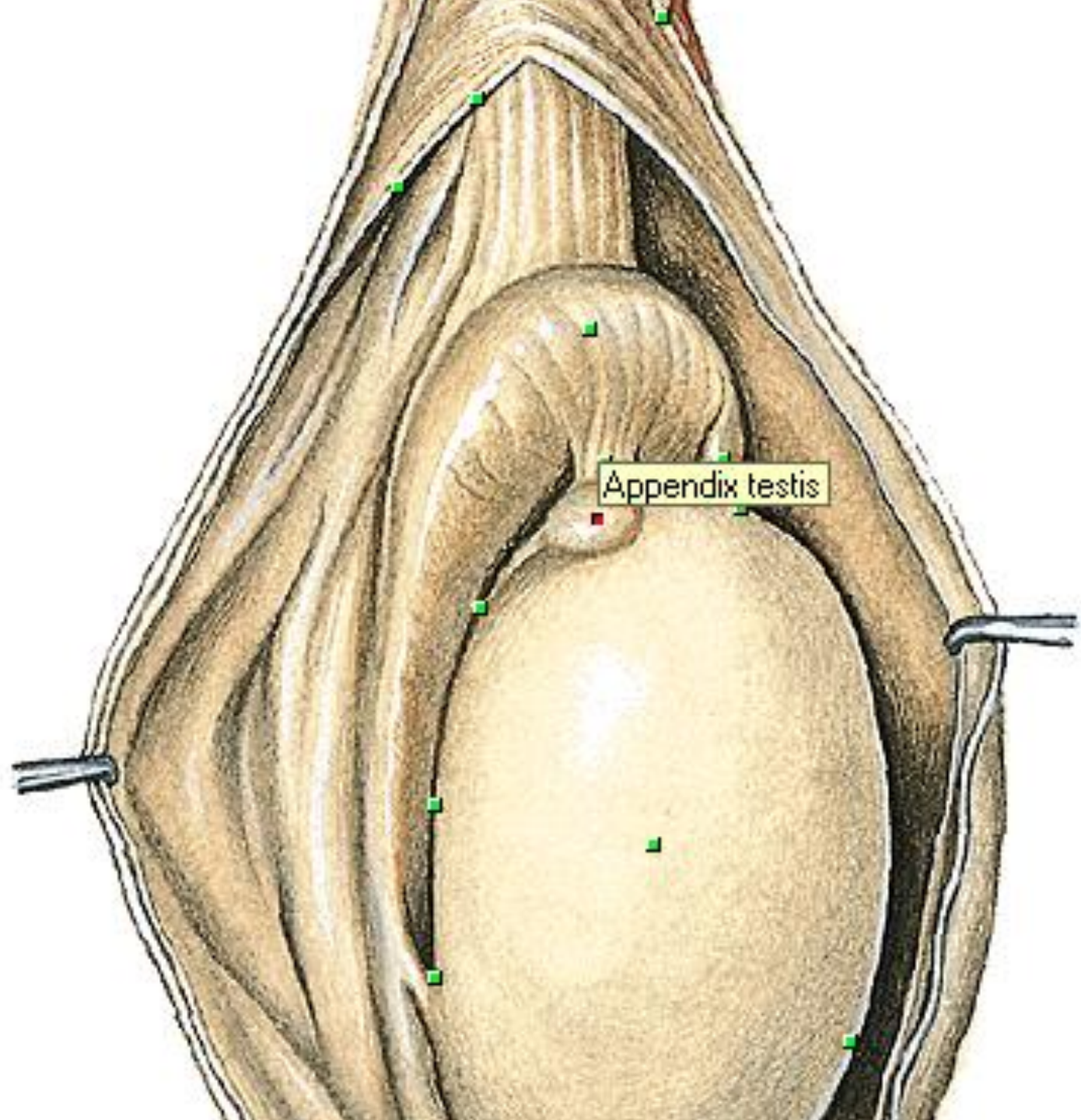
FACIES LATERALIS
FACIES MEDIALIS



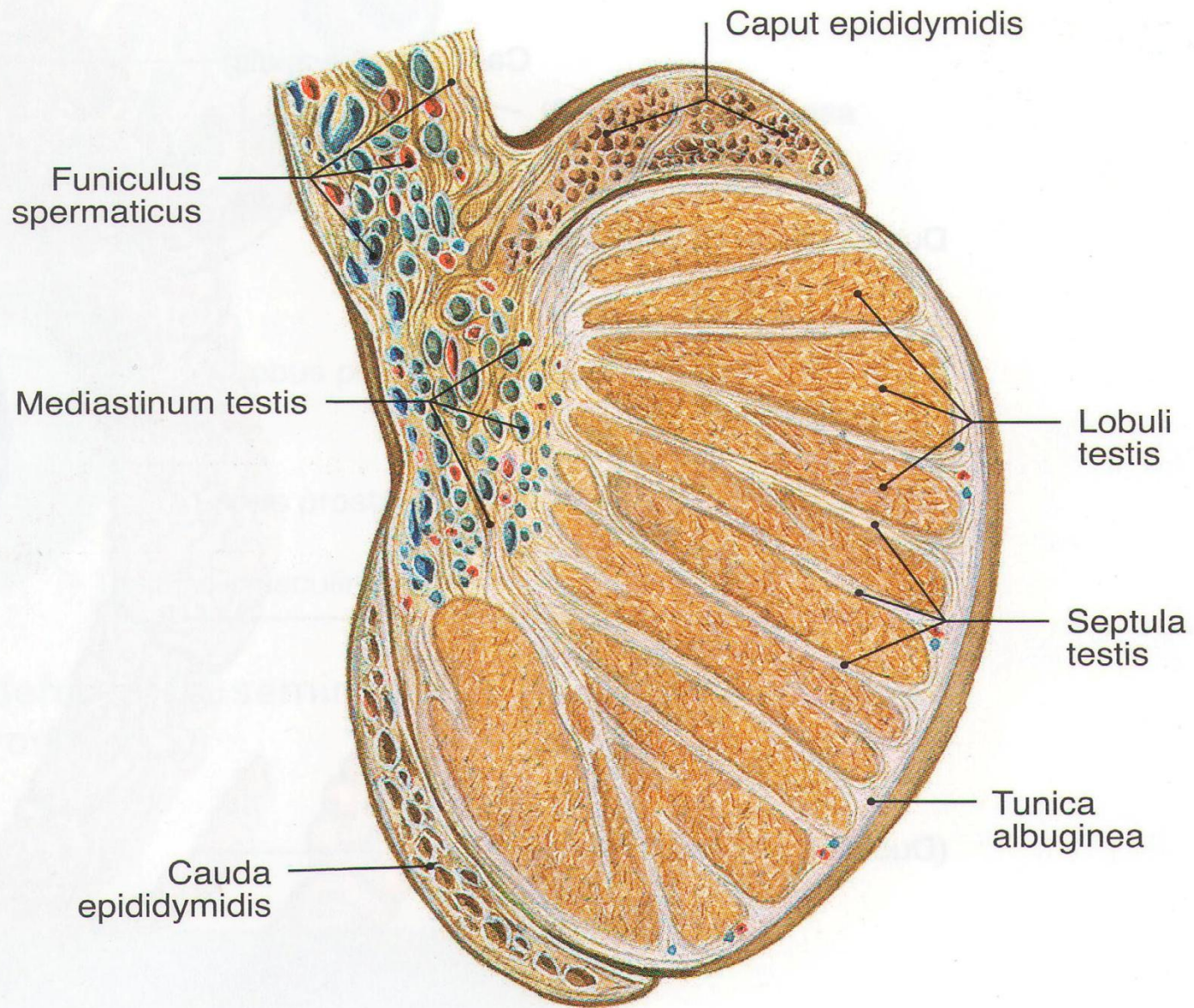


Facies lateralis

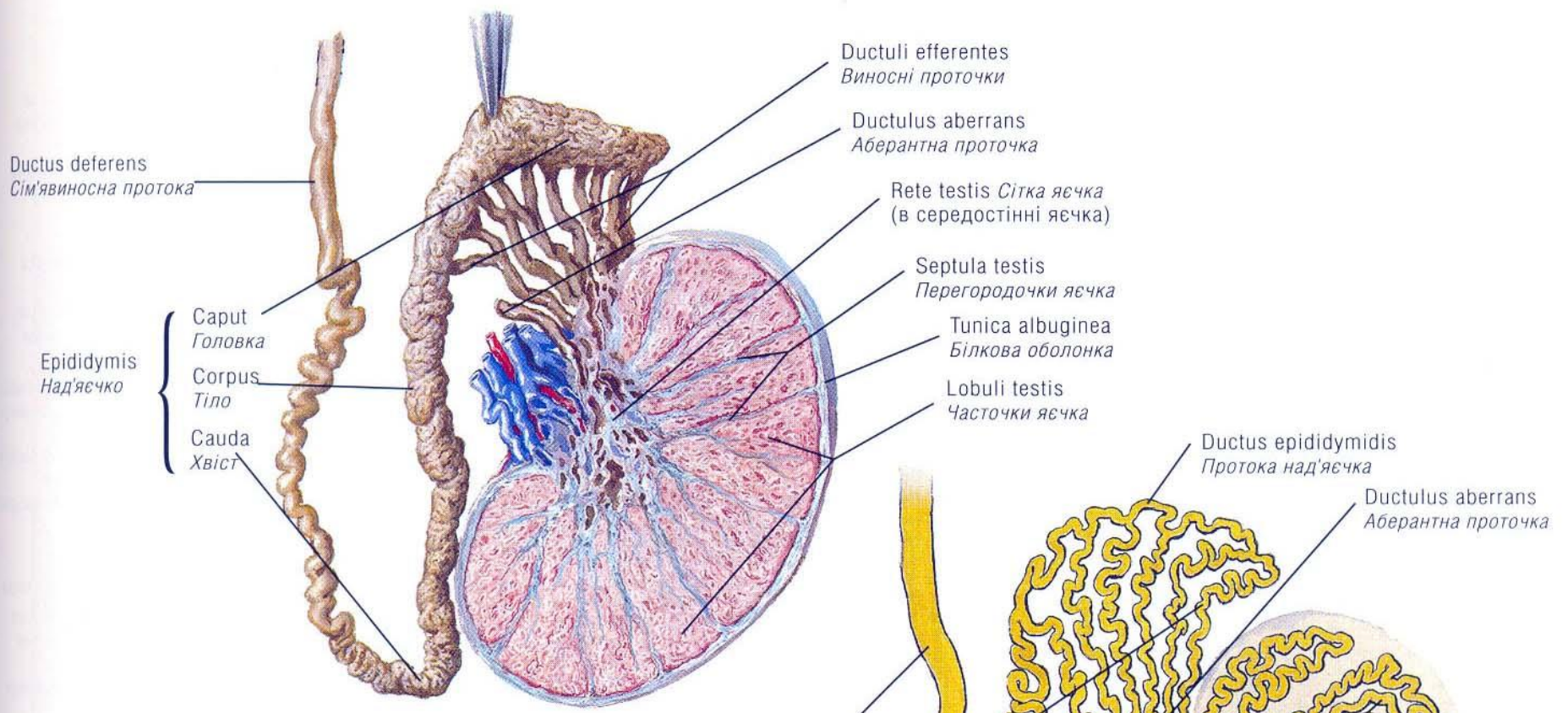




Appendix testis



Яєчко (testis), над'яєчко (epididymis) і сім'яносна протока (ductus deferens)



Фронтальний переріз

Ductus deferens
Сім'яносна протока

Epididymis
Над'яєчко

- Caput
Головка
- Corpus
Тіло
- Cauda
Хвіст

Ductuli efferentes
Виносні проточки

Ductulus aberrans
Аберантна проточка

Rete testis Сітка яєчка
(в середостінні яєчка)

Septula testis
Перегородочки яєчка

Tunica albuginea
Білкова оболонка

Lobuli testis
Часточки яєчка

Ductus epididymidis
Протока над'яєчка

Ductulus aberrans
Аберантна проточка

Ductus deferens
Сім'яносна протока

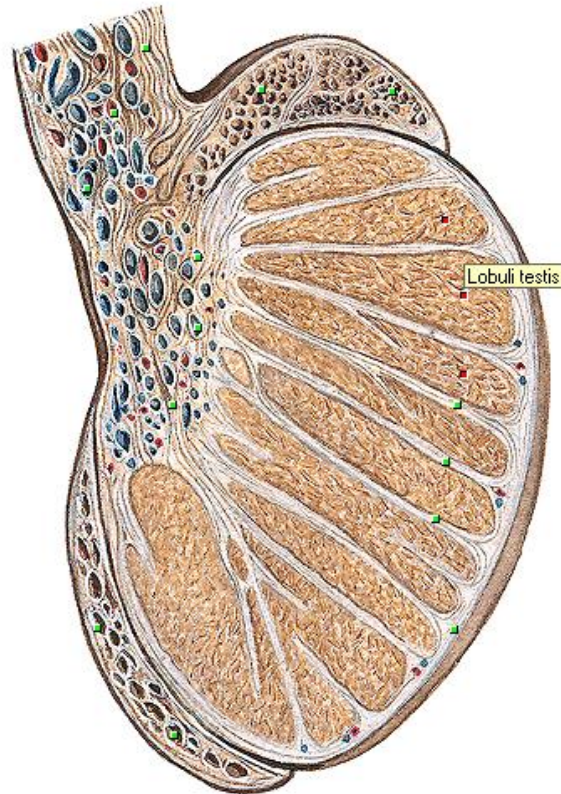
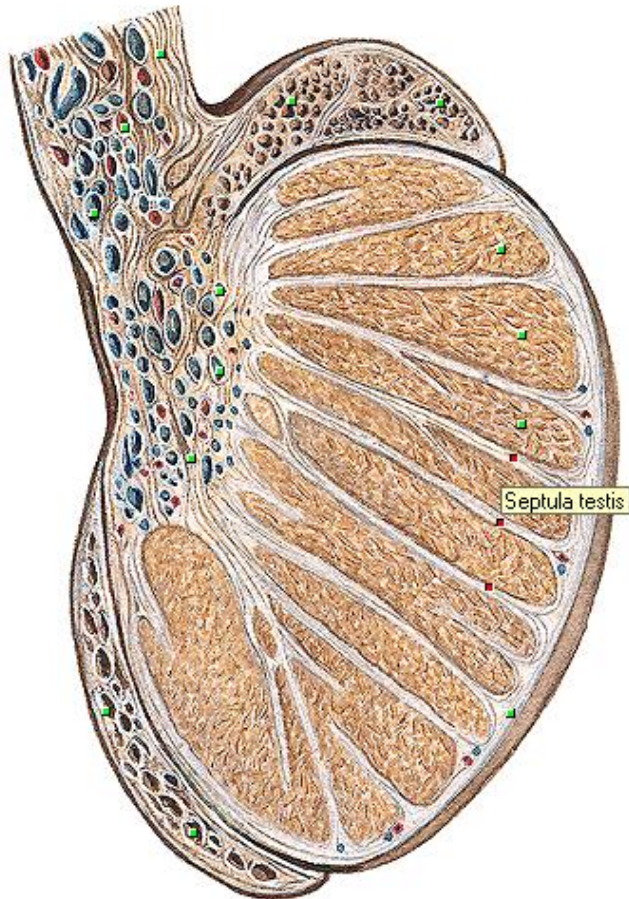
Ductuli efferentes
Виносні проточки

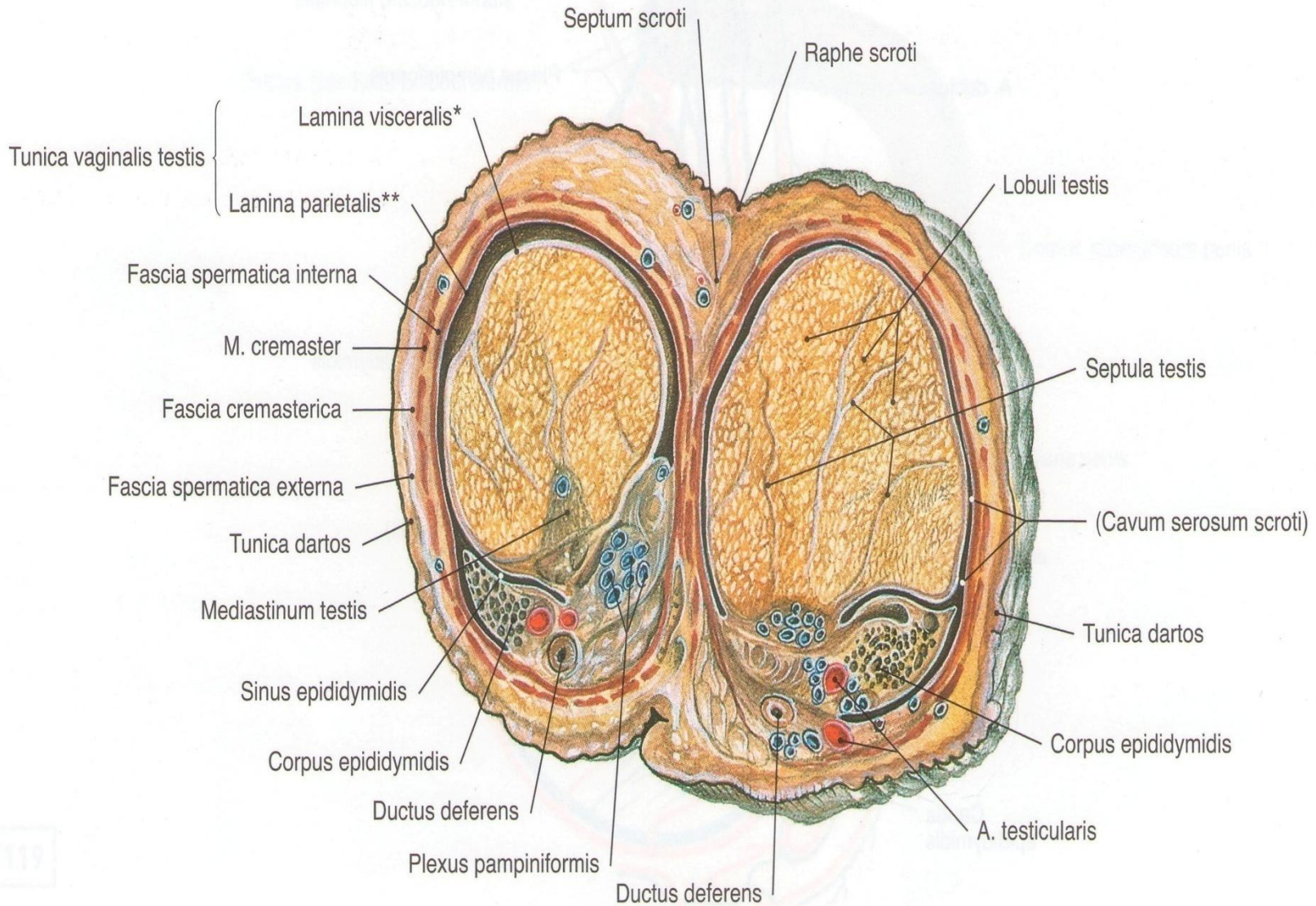
Ductus epididymidis
Протока над'яєчка

Rete testis Сітка яєчка
(в середостінні яєчка)

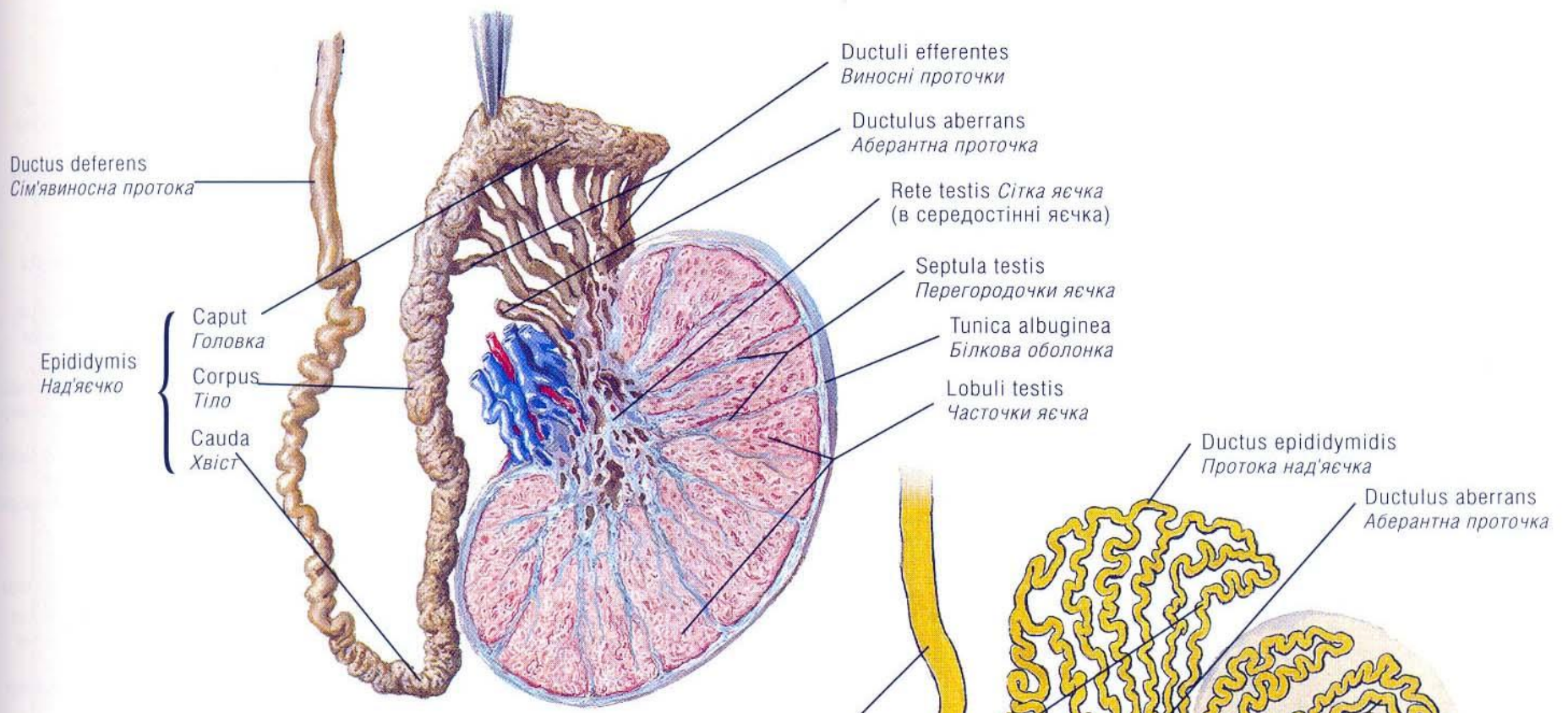
Ductulus aberrans
Аберантна проточка

Tubuli seminiferi contorti
Звивисті сім'яні трубочки





Яєчко (*testis*), над'яєчко (*epididymis*) і сім'яносна протока (*ductus deferens*)



Фронтальний переріз

Ductus deferens
Сім'яносна протока

Epididymis
Над'яєчко

- Caput
Головка
- Corpus
Тіло
- Cauda
Хвіст

Ductuli efferentes
Виносні проточки

Ductulus aberrans
Аберантна проточка

Rete testis Сітка яєчка
(в середостінні яєчка)

Septula testis
Перегородочки яєчка

Tunica albuginea
Білкова оболонка

Lobuli testis
Часточки яєчка

Ductus epididymidis
Протока над'яєчка

Ductulus aberrans
Аберантна проточка

Ductus deferens
Сім'яносна протока

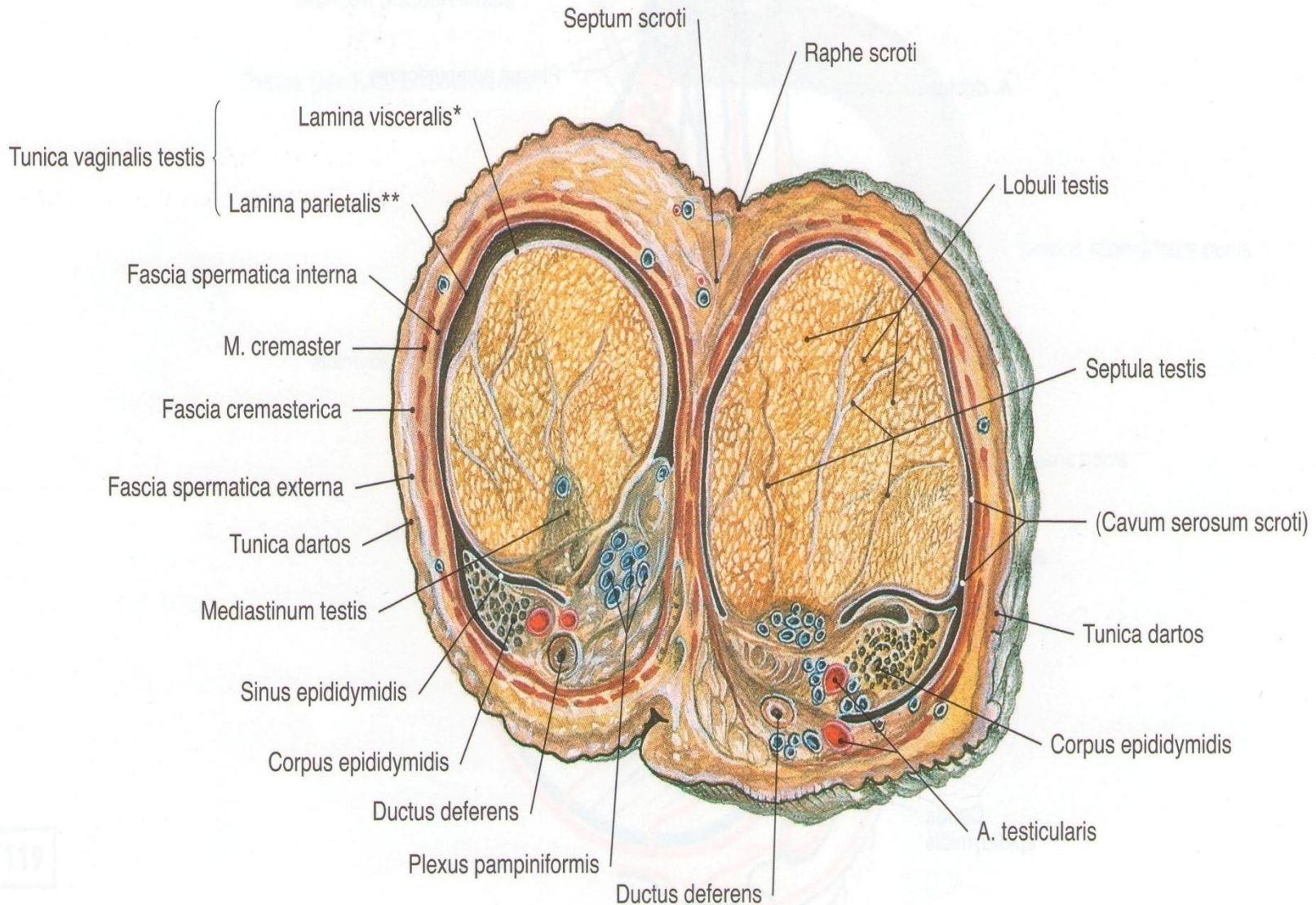
Ductuli efferentes
Виносні проточки

Ductus epididymidis
Протока над'яєчка

Rete testis Сітка яєчка
(в середостінні яєчка)

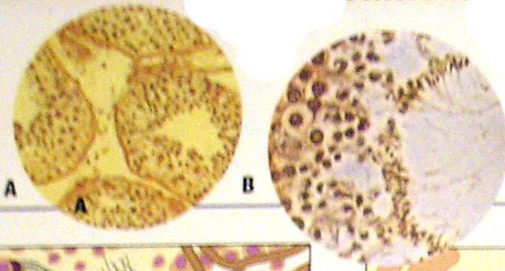
Ductulus aberrans
Аберантна проточка

Tubuli seminiferi contorti
Звивисті сім'яні трубочки



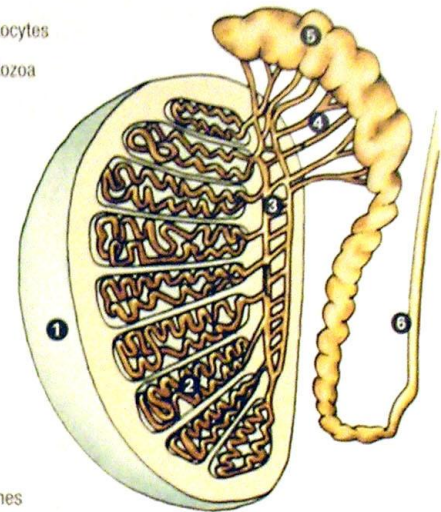
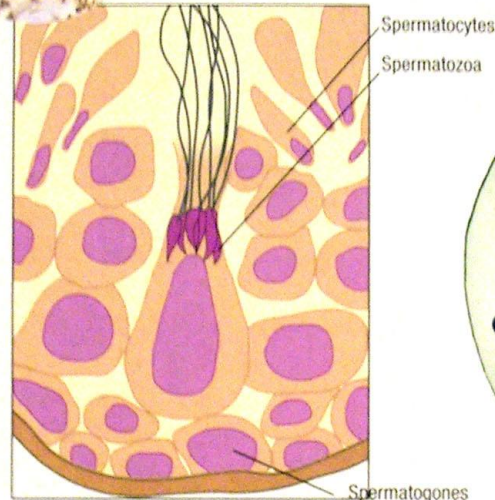
IN THE MALE

Through a succession of cellular divisions, thanks to the production by



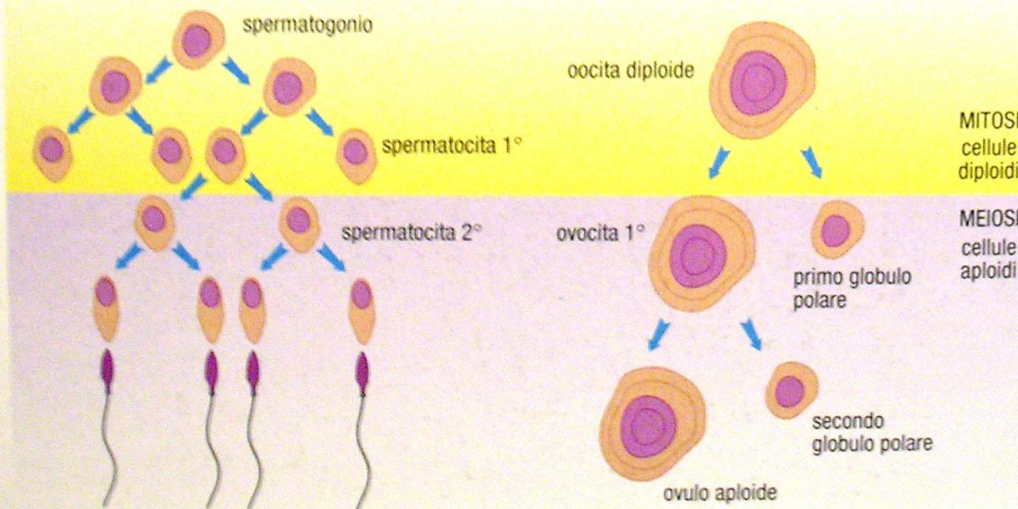
► Detail of a testicle

The diagram, which describes the section of a seminiferous duct, shows two different enlargements of the stratified disposition of the cells from which the sperms originate. The pictures **A** and **B** show two different histological sections that allow us to see the sperm that "appears" inside the lumen of the duct.



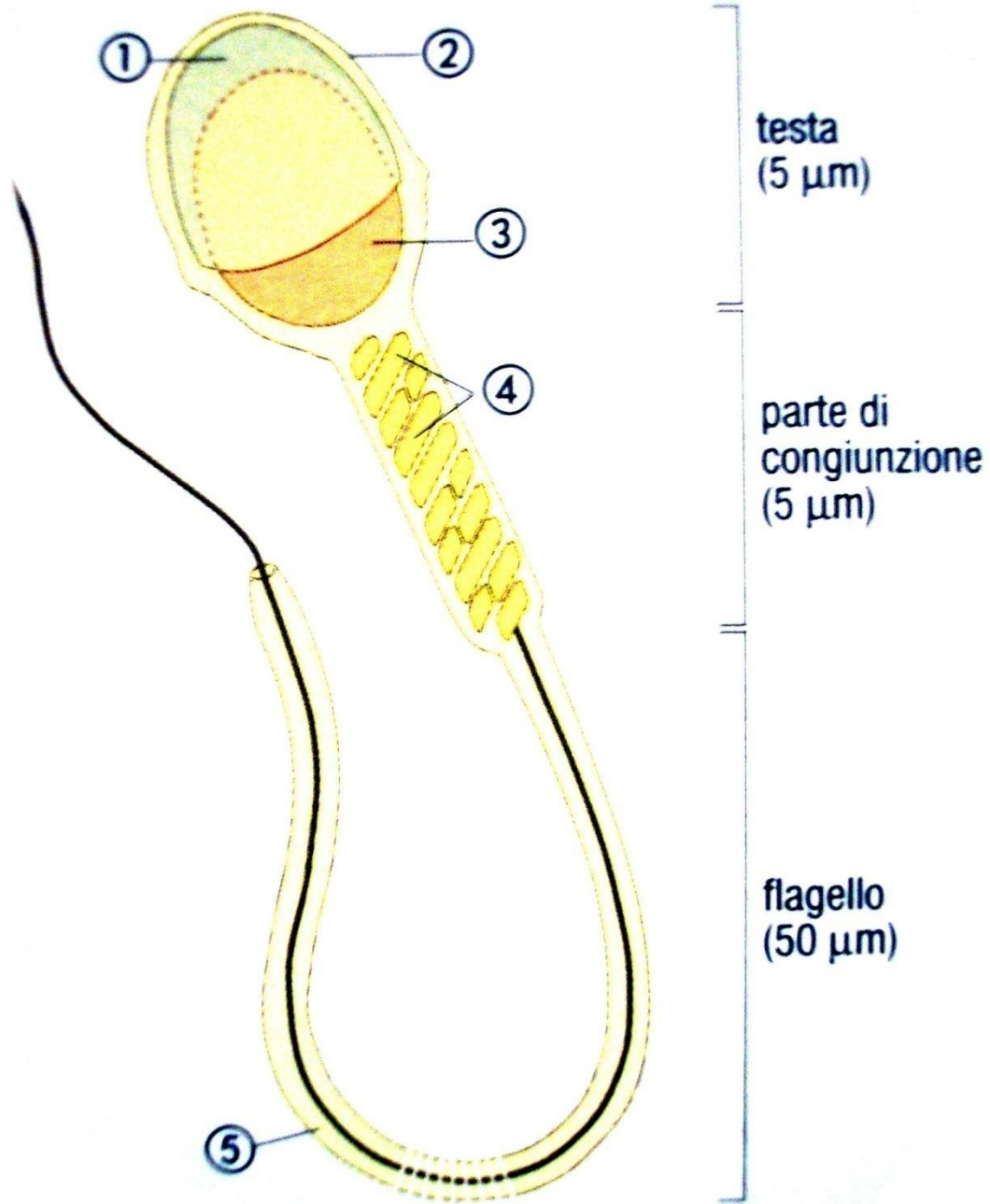
► Production of ovula and spermatozoal

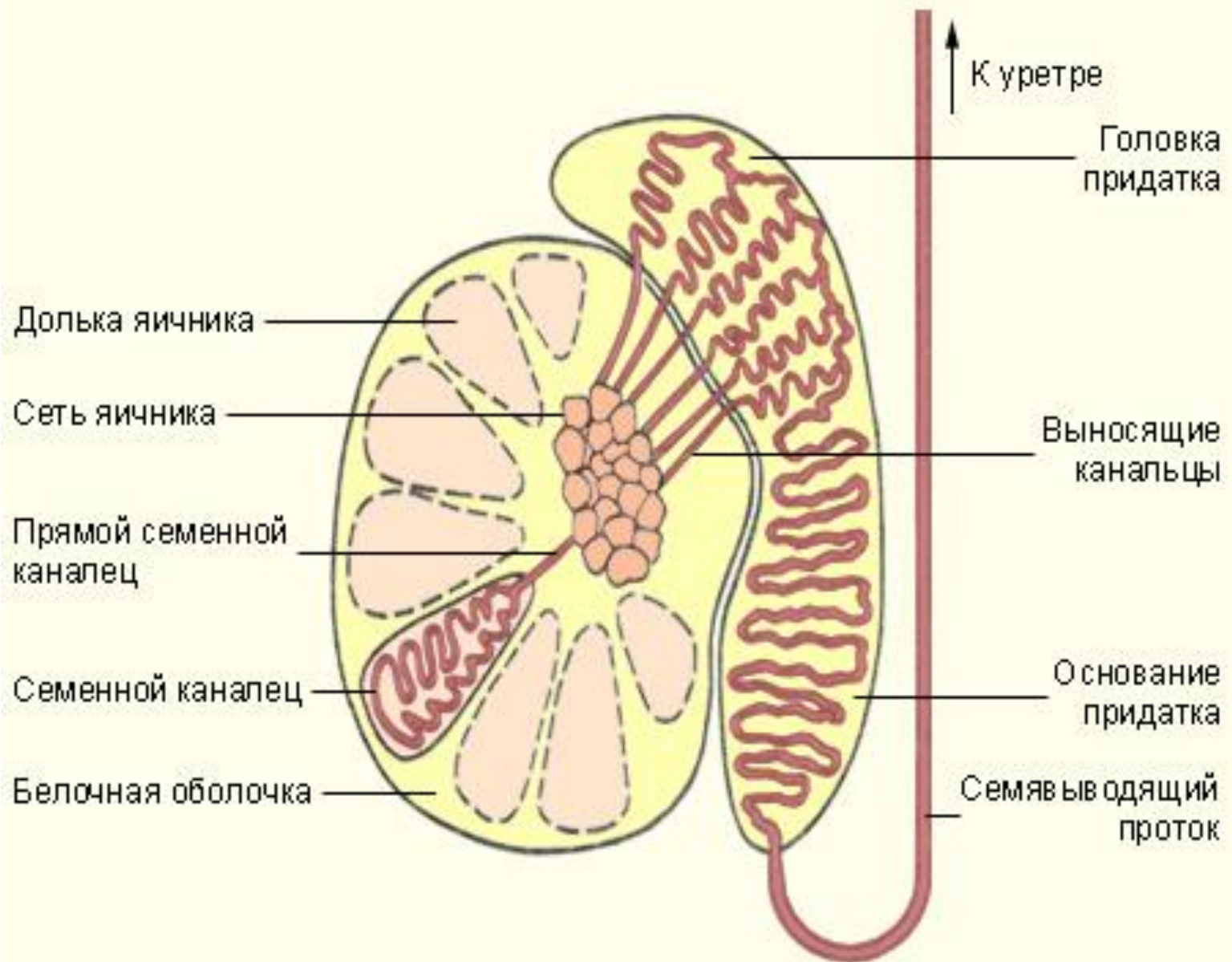
The testicular spermatogones multiply through mitosis, keeping the number of chromosomes intact. After differentiating into secondary spermatocytes, they go through meiosis, and generate spermatozoa, which are characterized by half the total number of chromosomes. On the other hand, the ovule, originates inside the oocyte with the successive extrusion of two polar types: the first one represents the nucleus of the mitosis of the oocyte; the second one is made up of a meiotic nucleus that cut the number of chromosomes in half.



▲ Structure of the testicle

Schematic section:
1 Dura external capsule;
2 Efferent seminiferous tubules, about 75cm long, which exit from the 200 lobes, containing 400-600 tubules each;
3 Network of the testicle;
4 12-20 efferent ducts of the network;
5 Epididymis;
6 Deferent vessel.





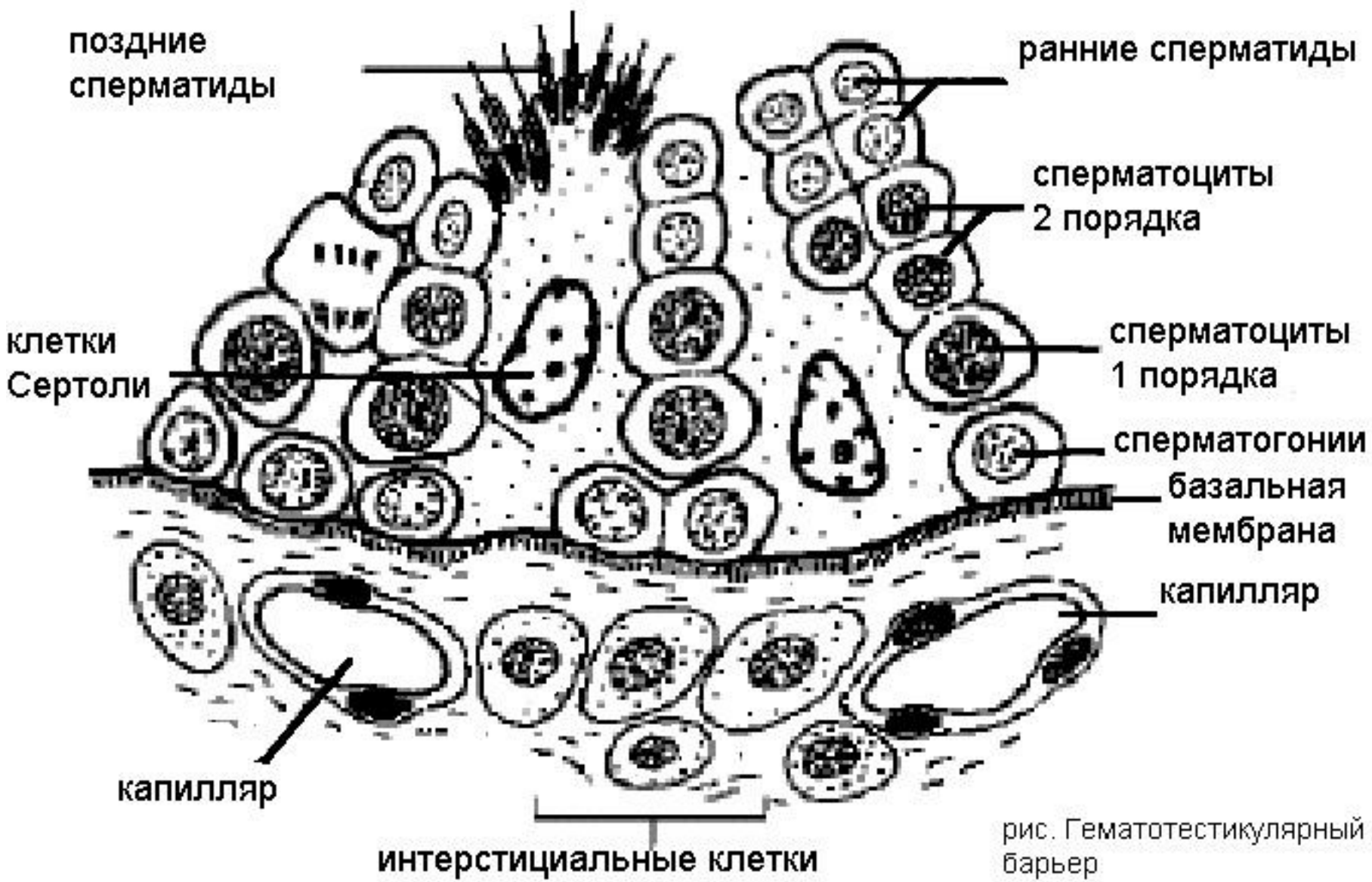
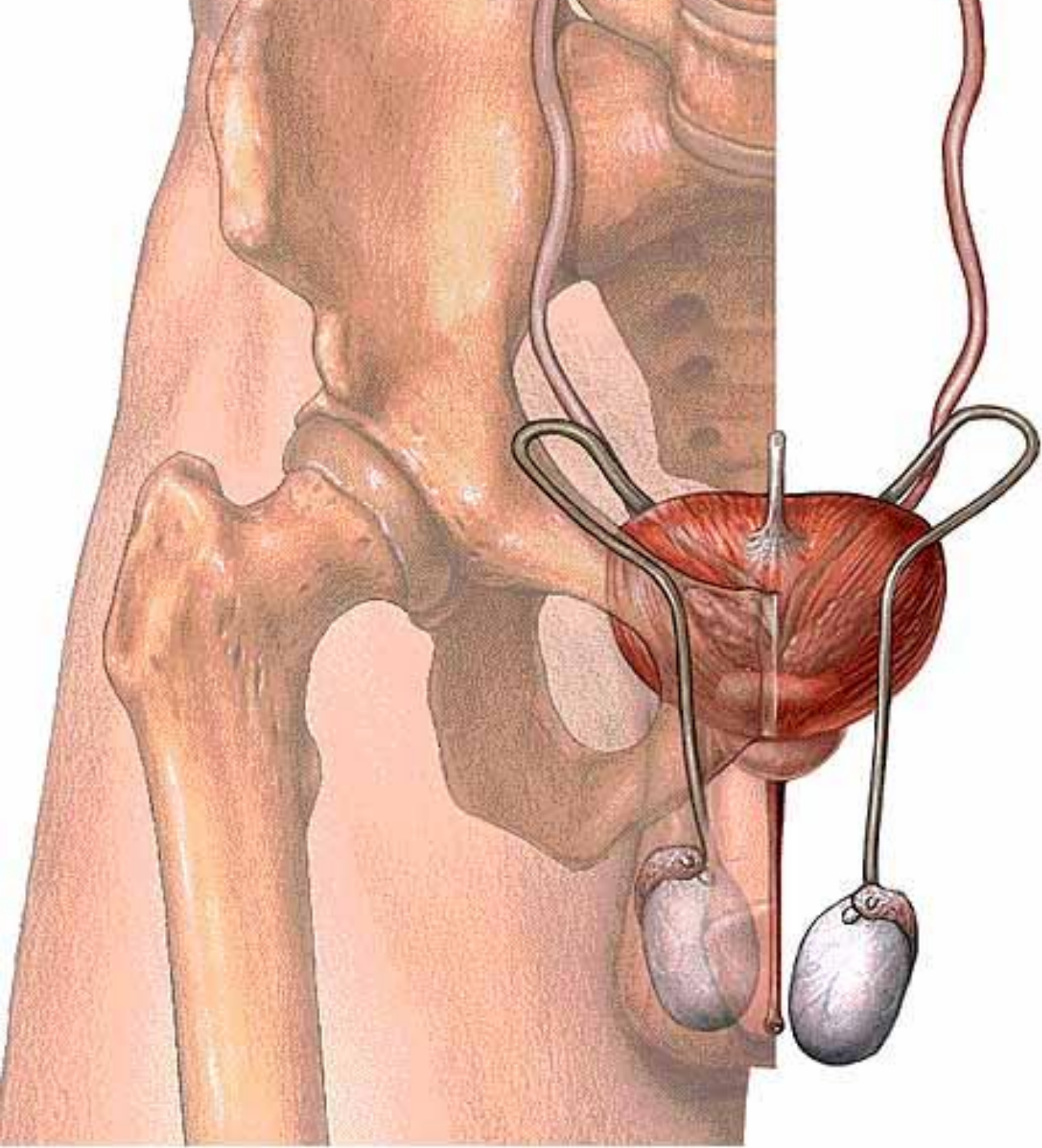


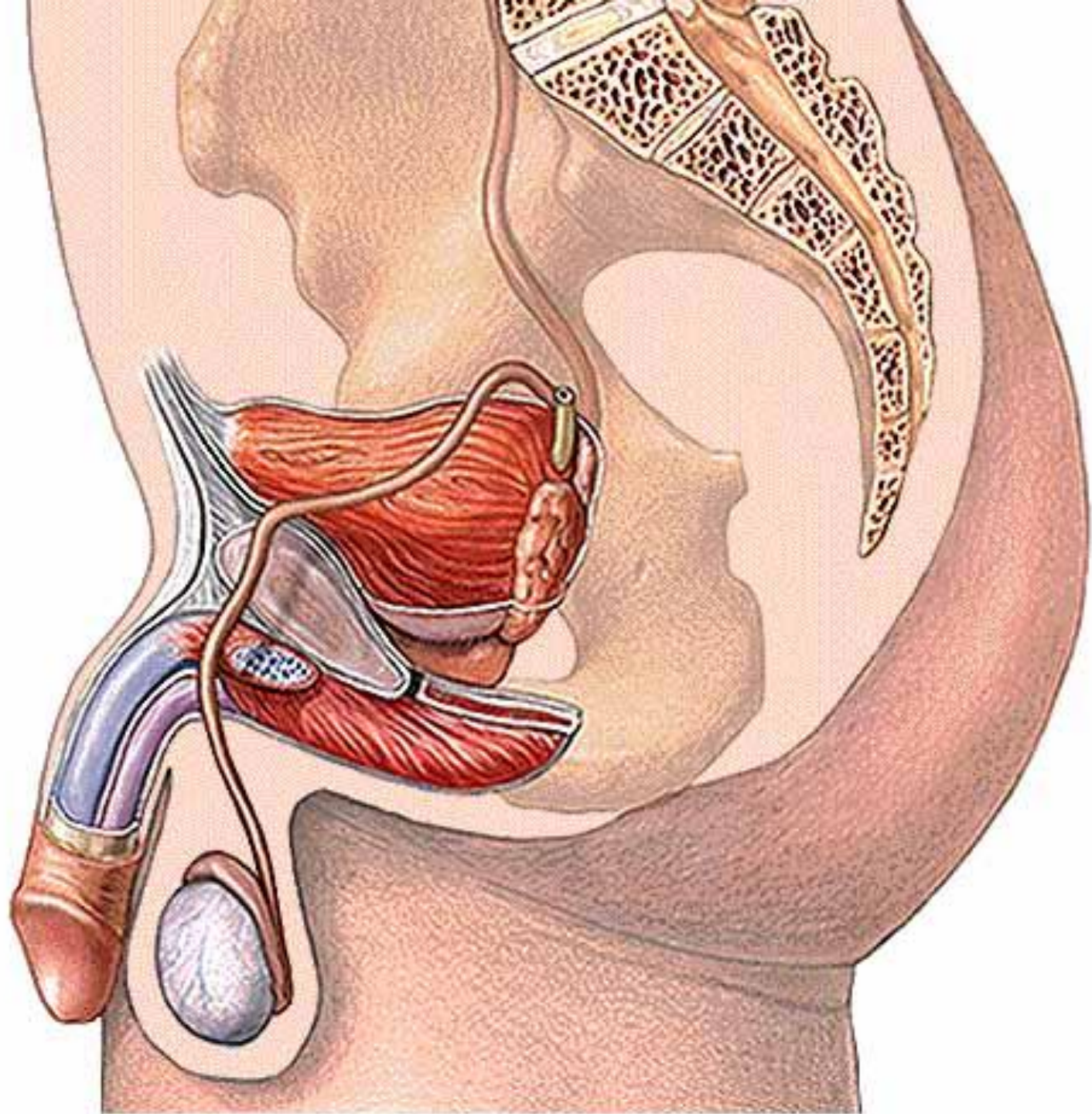
рис. Гематотестикулярный барьер

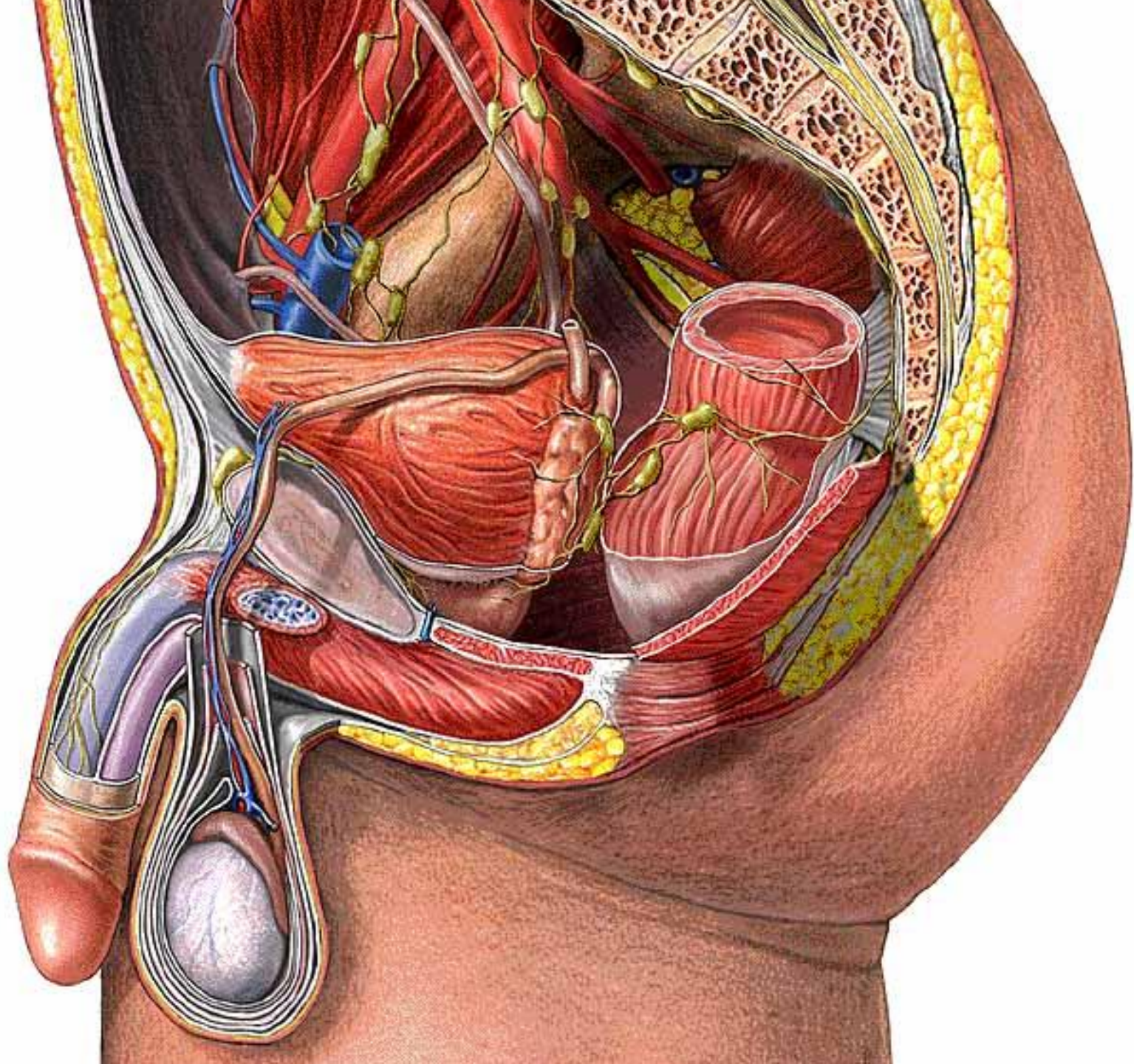
Internal male genital organs:

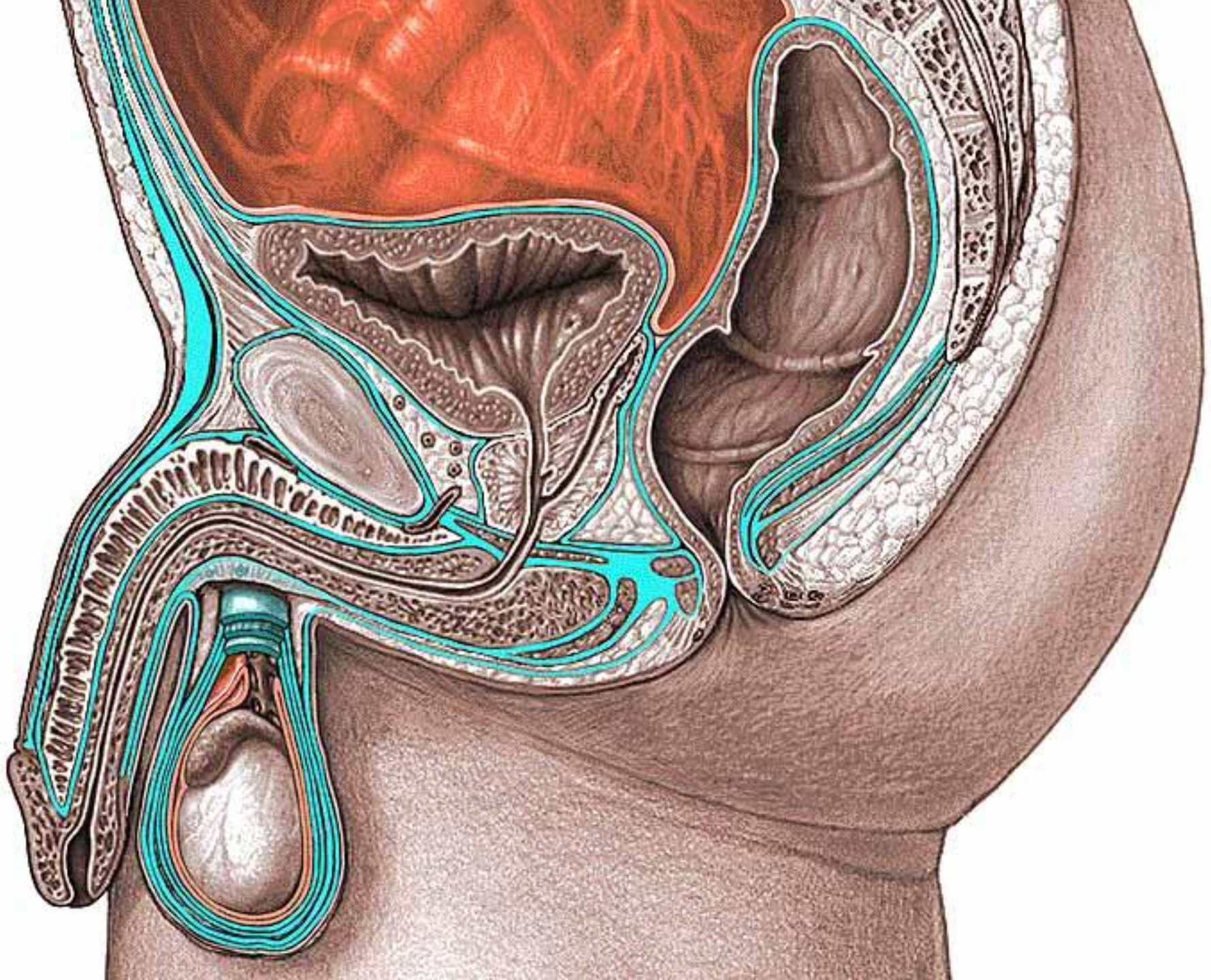
1. Glands: Testis, Seminal vesicles, Prostate, Bulbo-urethral glands.

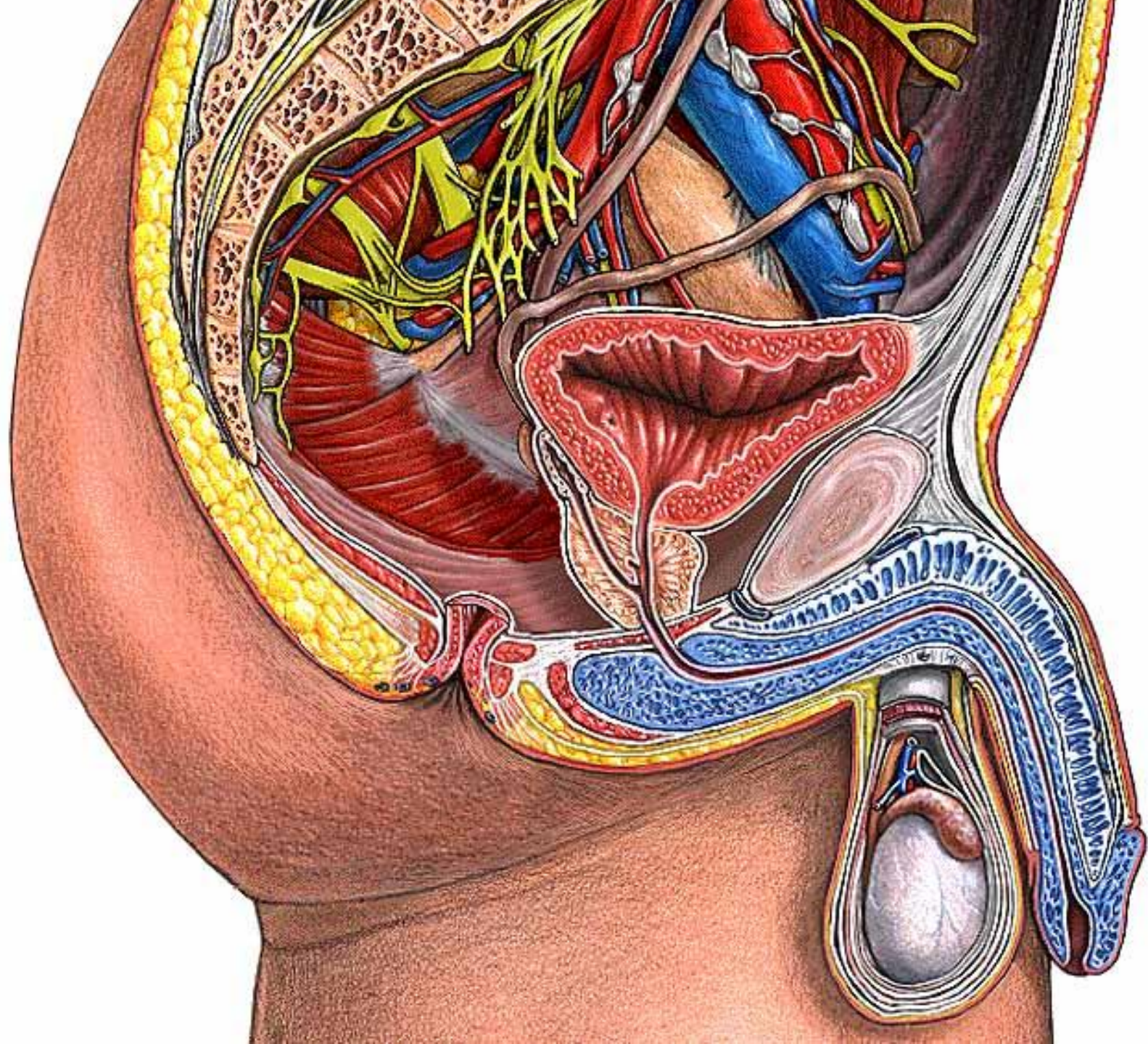
2. Spermatic ways: Epididymis, Vas deferens (Seminal duct), Ejaculatory duct.



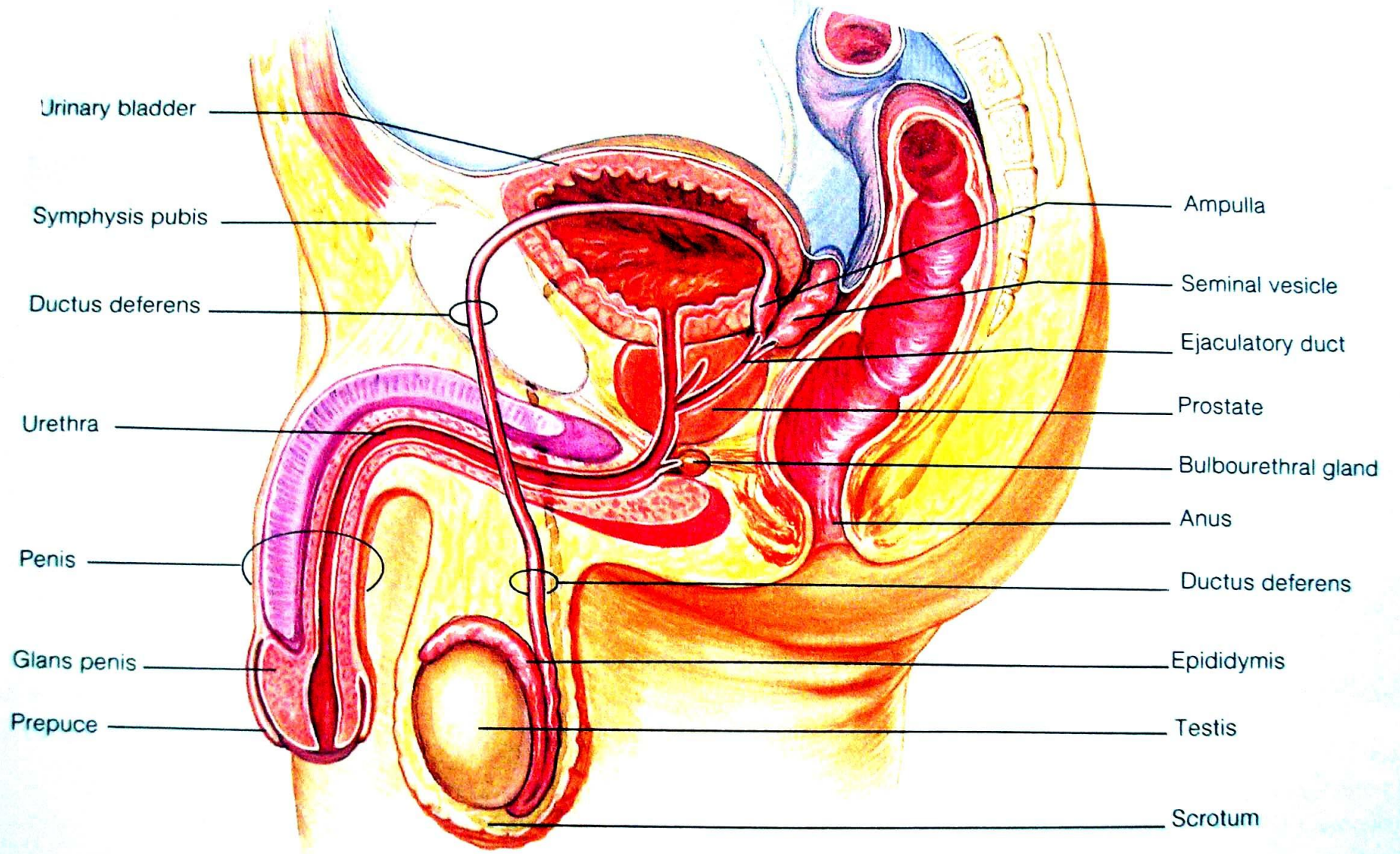












Urinary bladder

Symphysis pubis

Ductus deferens

Urethra

Penis

Glans penis

Prepuce

Ampulla

Seminal vesicle

Ejaculatory duct

Prostate

Bulbourethral gland

Anus

Ductus deferens

Epididymis

Testis

Scrotum

External male genital organs:

- Penis,**
- Scrotum.**



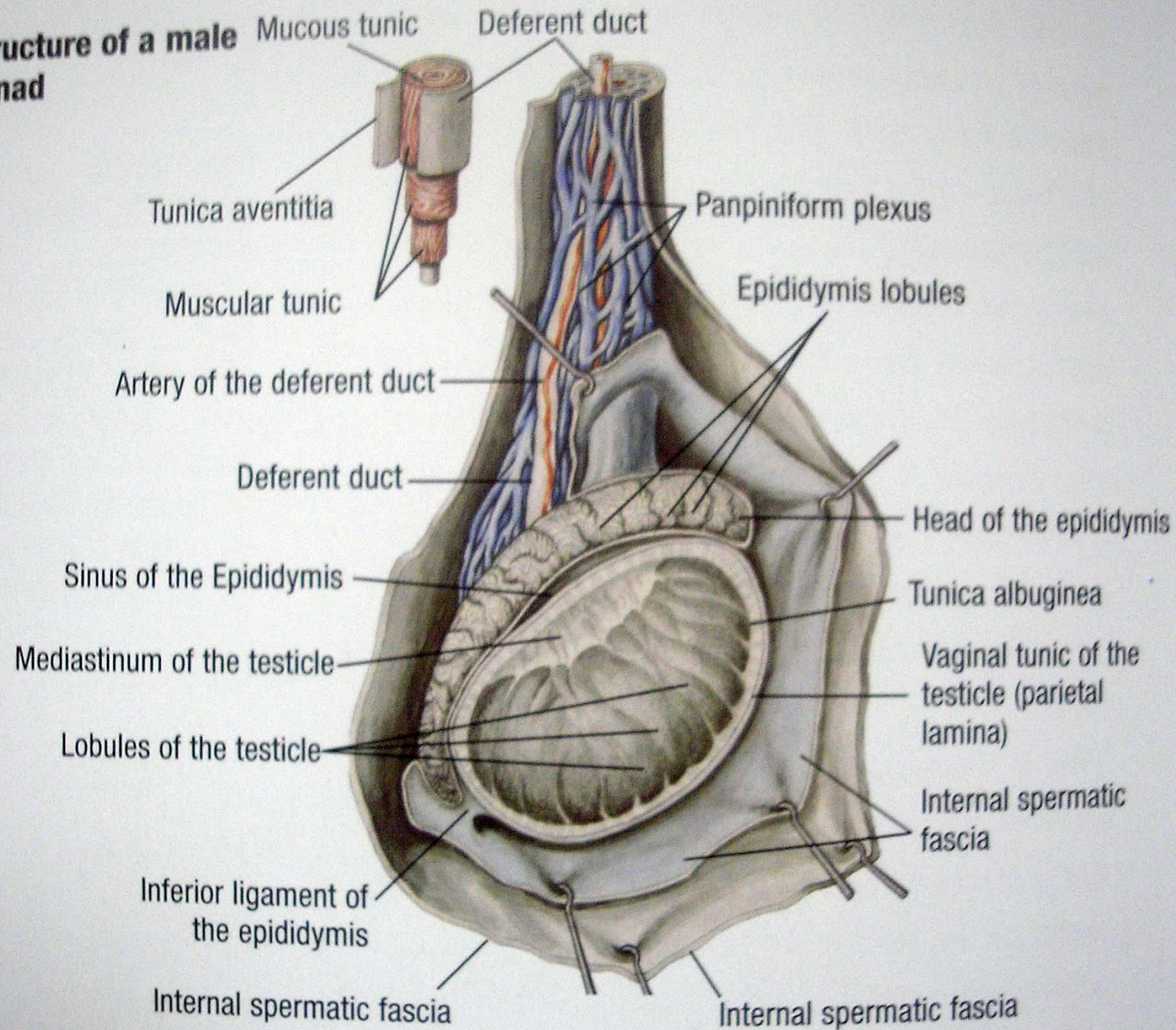
The structure of the Male genital organs

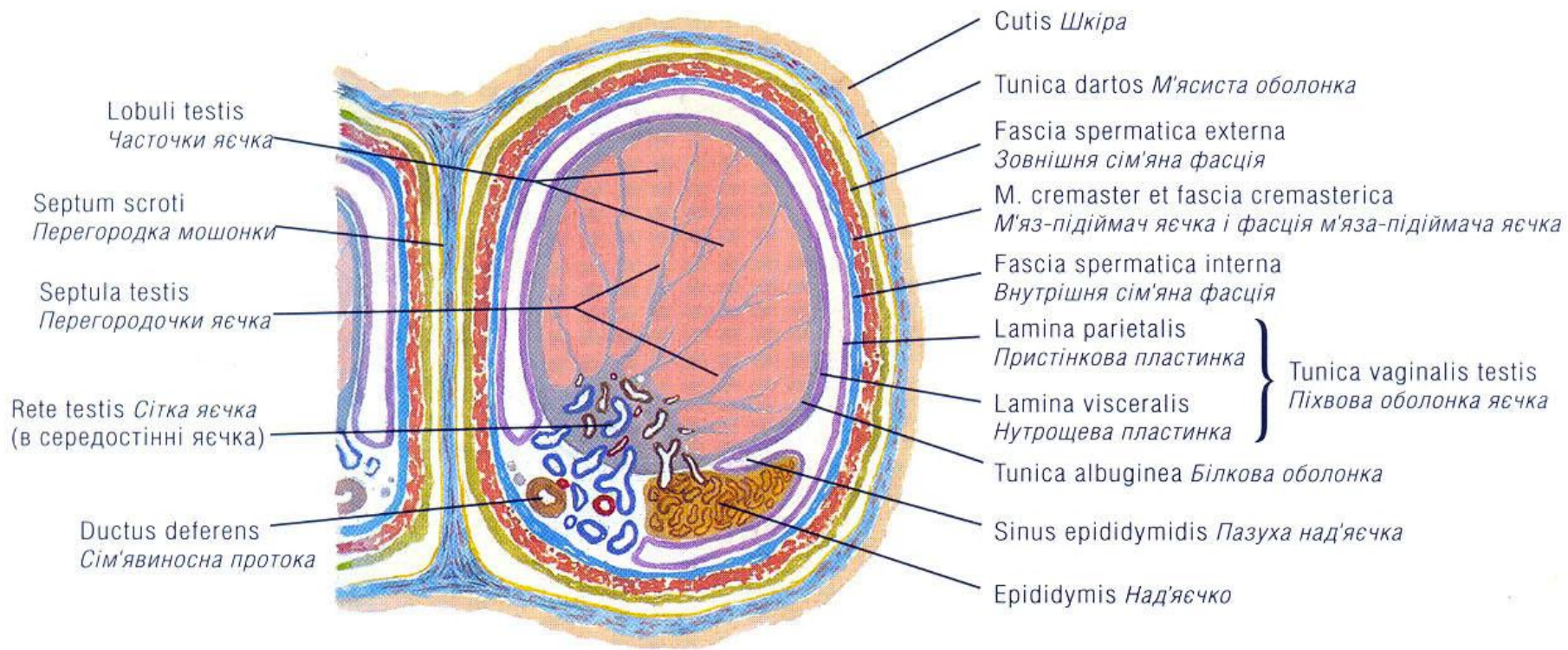
(organa genitalia masculina)

The **testis** (testis, L.; orchis, didymis, G.) are two glandular (parenchymatic) organs, which produce the semen and masculine sexual hormones. They are suspended in the **scrotum** by the **spermatic cords**.

The testis is invested by three tunics: the tunica vaginalis, tunica albuginea, and tunica vasculosa. Parenchyma of the testis is enclosed in a fibrous sac called the *tunica albuginea*.

Structure of a male gonad



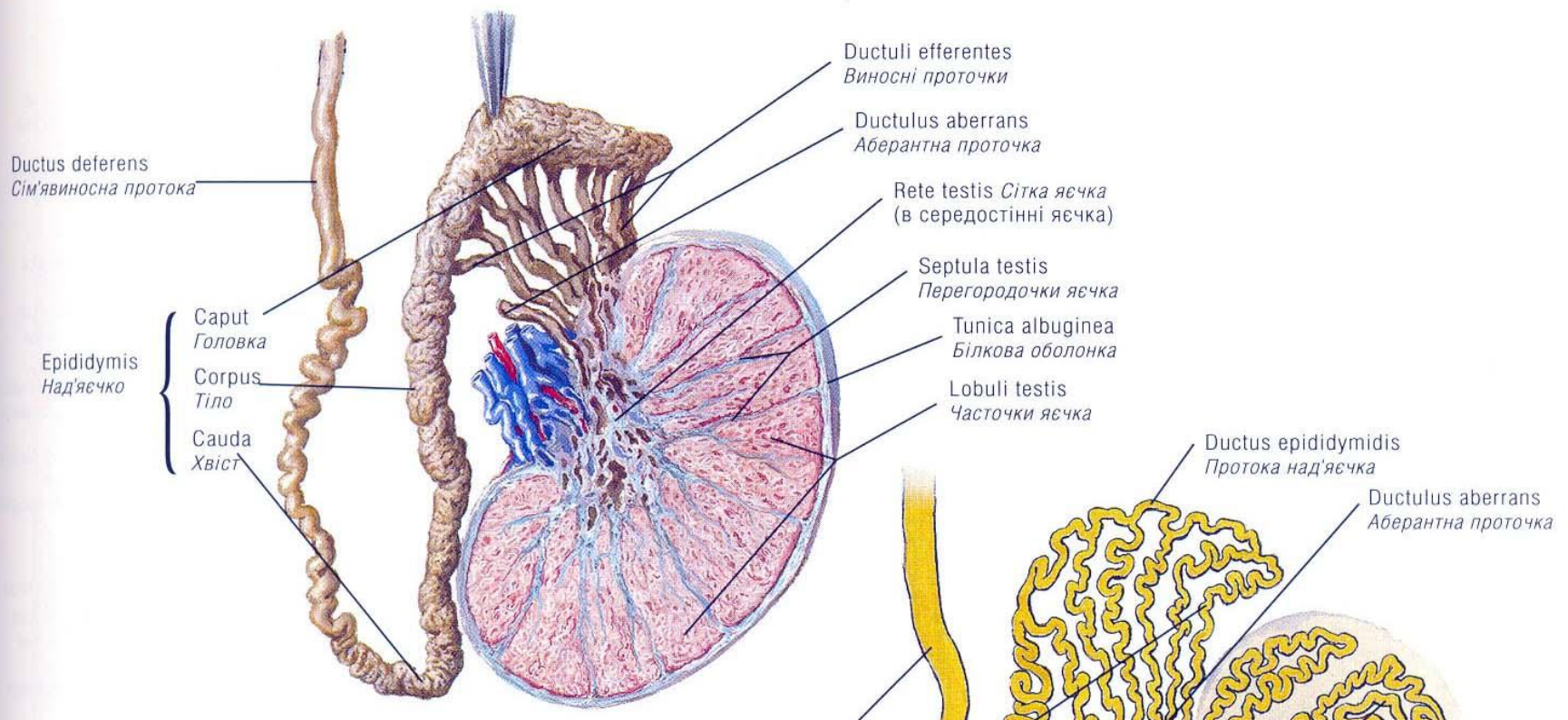


Поперечний переріз мошонки і яєчка

This sac (*tunica albuginea*) extends into the testis as **mediastinum testis** and **septae**, which divide it into compartments called lobules (*lobuli testis*, L.). Their number, in a single testis, is estimated at 250-300.

Each lobule consists of
from one to three
**- convoluted seminiferous
tubules** (tubuli seminiferi
contorti, L.), and the
**-straight seminiferous
tubules** (tubuli seminiferi
recti, L.).

Яєчко (testis), над'яєчко (epididymis) і сім'явиносна протока (ductus deferens)



Ductus deferens
Сім'явиносна протока

Epididymis
Над'яєчко

- Caput
Головка
- Corpus
Тіло
- Cauda
Хвіст

Ductuli efferentes
Виносні проточки

Ductulus aberrans
Аберантна проточка

Rete testis Сітка яєчка
(в середостінні яєчка)

Septula testis
Перегородочки яєчка

Tunica albuginea
Білкова оболонка

Lobuli testis
Часточки яєчка

Ductus epididymidis
Протока над'яєчка

Ductulus aberrans
Аберантна проточка

Фронтальний переріз

Ductus deferens
Сім'явиносна протока

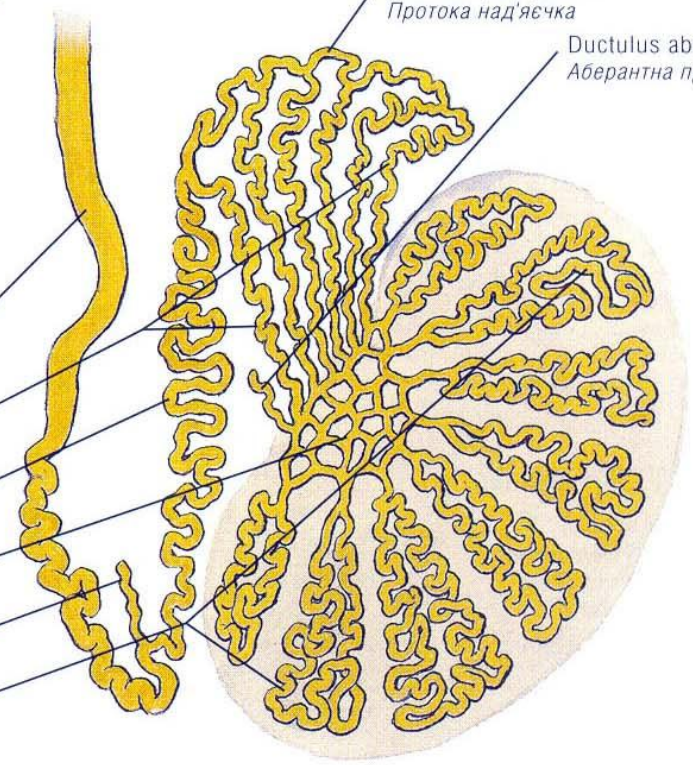
Ductuli efferentes
Виносні проточки

Ductus epididymidis
Протока над'яєчка

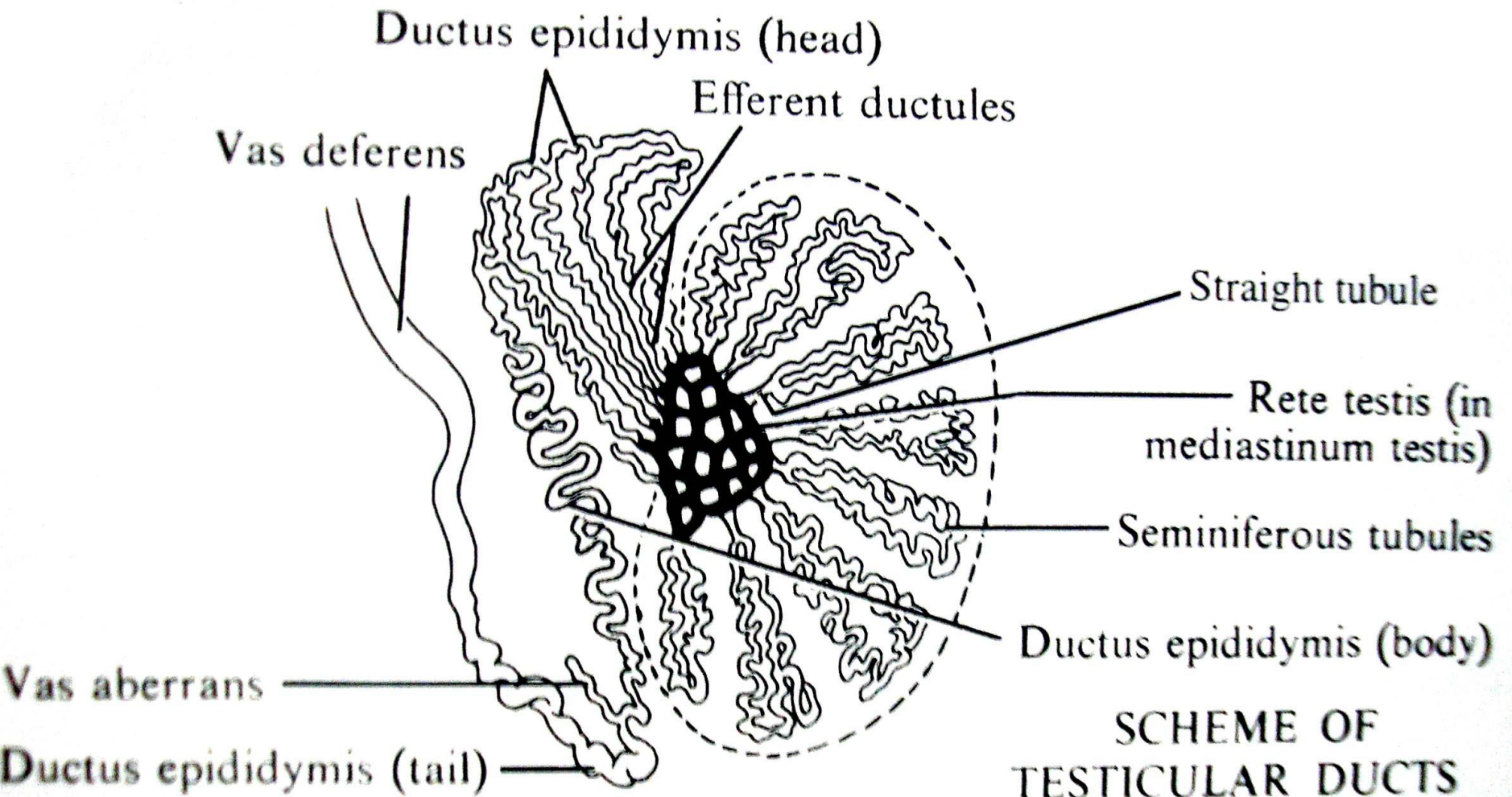
Rete testis Сітка яєчка
(в середостінні яєчка)

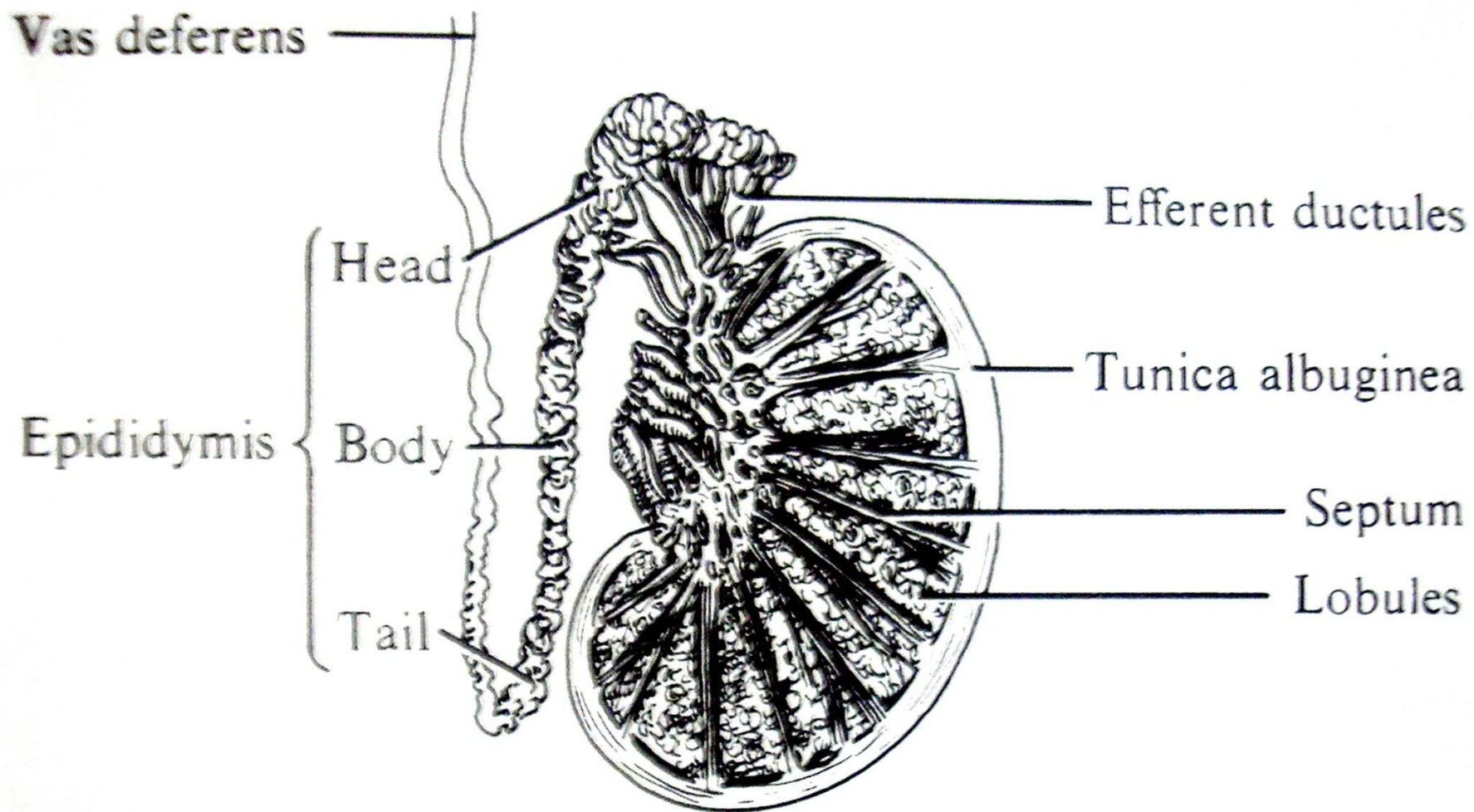
Ductulus aberrans
Аберантна проточка

Tubuli seminiferi contorti
Звивисті сім'яні трубочки



Схема





SAGITTAL SECTION - TESTIS

The combined length of the seminiferous tubules is about 225 m. The convoluted tubules produce sperm. The seminiferous tubules are the functional units of the testis because it is here the spermatogenesis (the production of sperm cells) occurs.

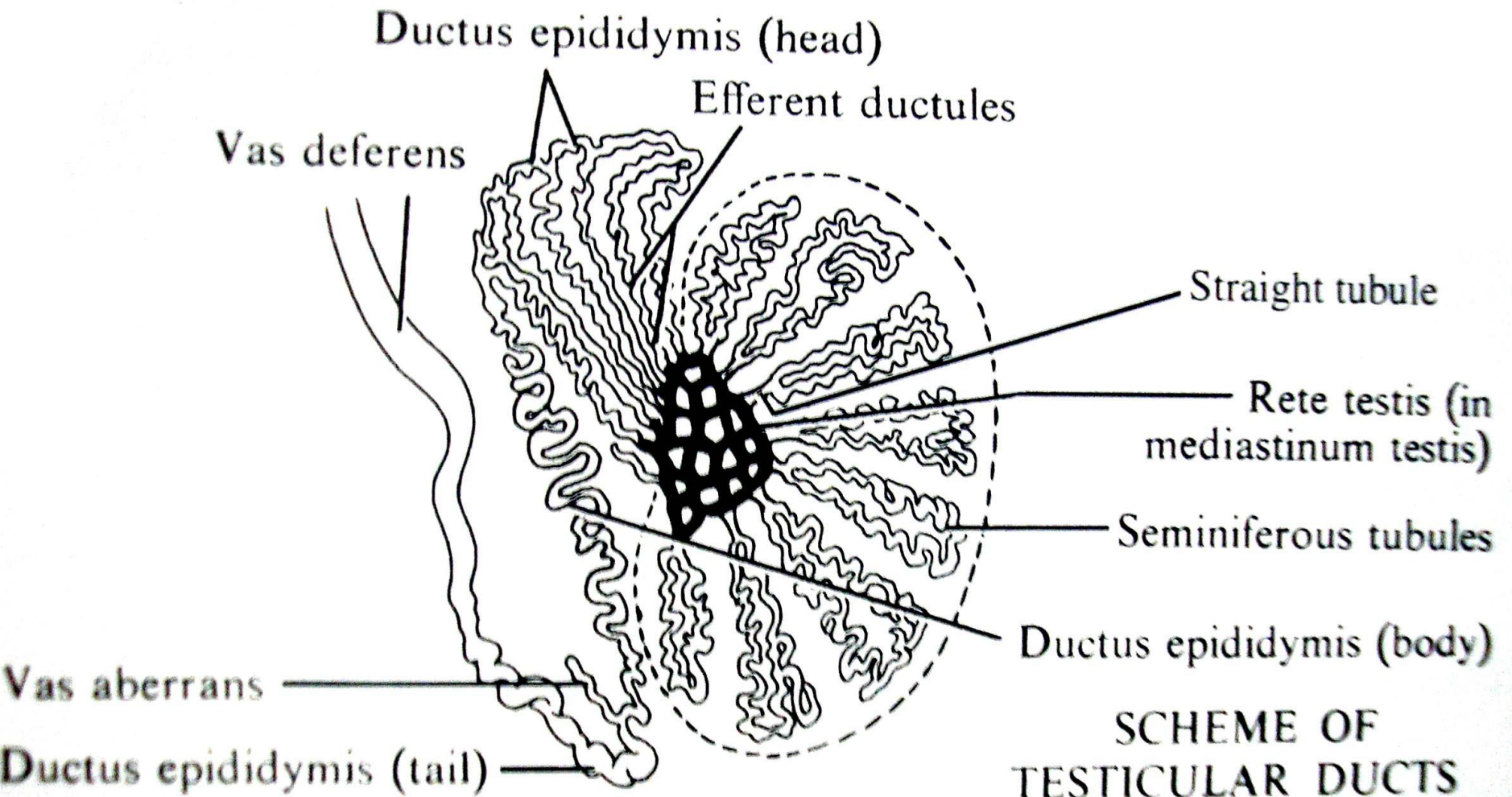
Sperm cells are produced at the rate of thousands per second—more than 100 million per day – throughout the life of a healthy, sexually mature male.

Between the seminiferous tubules are specialized endocrine cells called interstitial cells (of Leydig). The function of these cells is to produce and secrete the male sex hormones (testosterone).

The testes are thus considered mixed exocrine and endocrine glands because they produce both sperm cells and androgens.

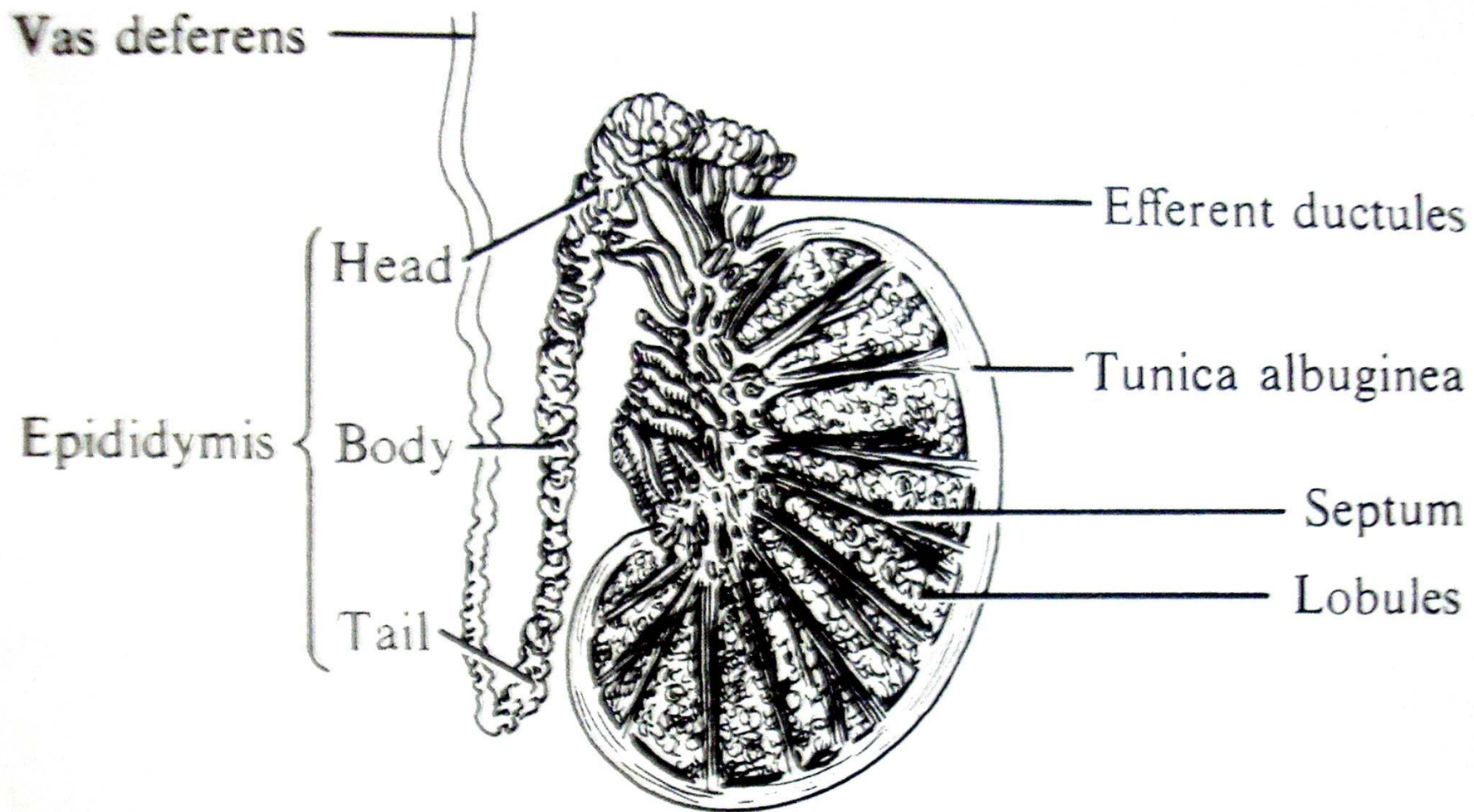
The straight seminiferous tubules open into a network of channels, the rete testis, in the thickness of the mediastinum.

At the upper end of the mediastinum there are 12 to 20 ducts, the **ductuli efferentes testis**. They perforate the tunica albuginea, and carry the sperm from the testis to the head of the epididymis.



On leaving persons
ductuli efferentes testis
form a series conical lobules
of the epididymis.

The ductuli efferentes
testis drain into a single
canal of the epididymis
(**ductus epididymis, L.**).

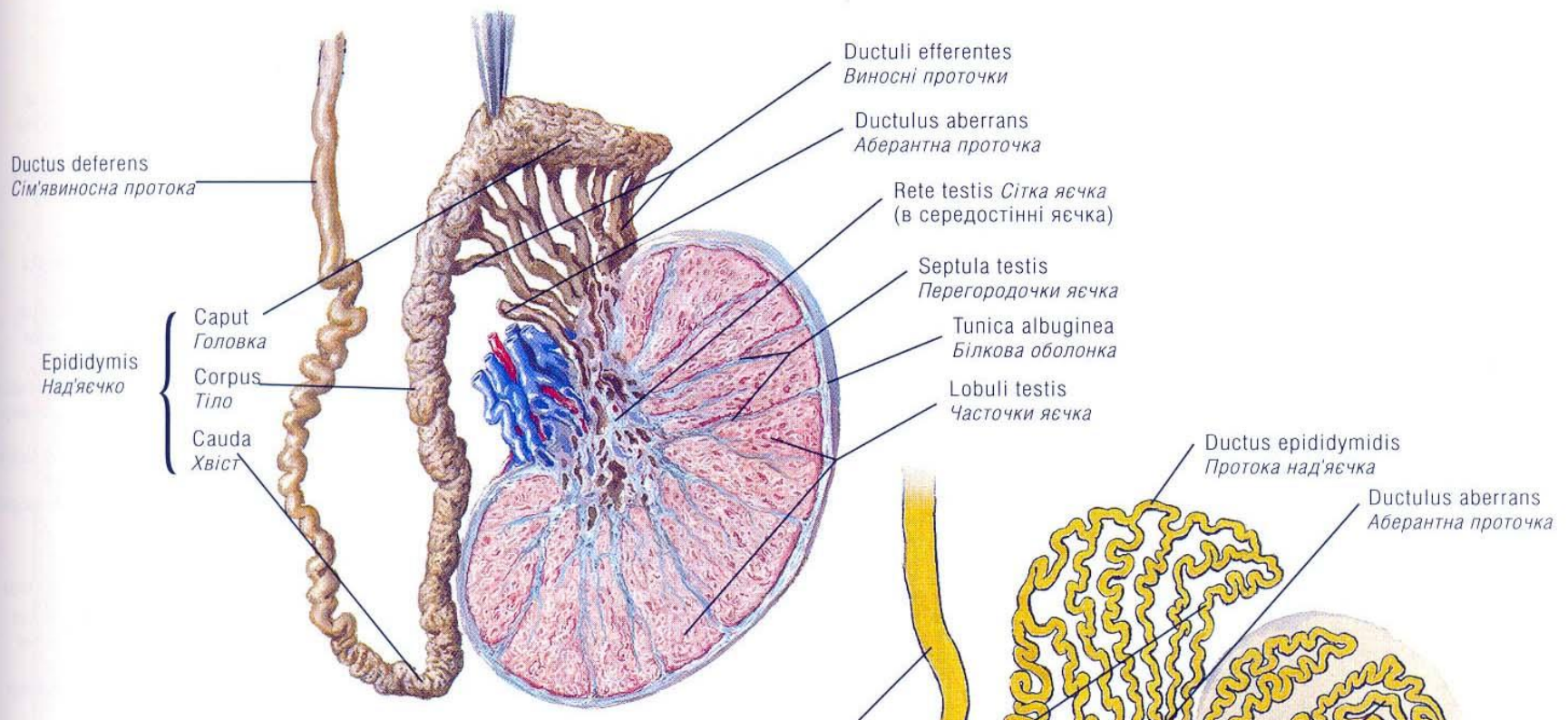


SAGITTAL SECTION - TESTIS

**The epididymis
(pl, epididymides) is
a long, flattened
organ attached to
the posterior
margin of the testis.**

The epididymis is consists of a central portion or body; an upper enlarged extremity, the head; and a lower extremity, the tail, which is continuous with the **ductus deferens.**

Яєчко (testis), над'яєчко (epididymis) і сім'явиносна протока (ductus deferens)



Ductus deferens
Сім'явиносна протока

Epididymis
Над'яєчко

- Caput
Головка
- Corpus
Тіло
- Cauda
Хвіст

Ductuli efferentes
Виносні проточки

Ductulus aberrans
Аберантна проточка

Rete testis Сітка яєчка
(в середостінні яєчка)

Septula testis
Перегородочки яєчка

Tunica albuginea
Білкова оболонка

Lobuli testis
Часточки яєчка

Ductus epididymidis
Протока над'яєчка

Ductulus aberrans
Аберантна проточка

Фронтальний переріз

Ductus deferens
Сім'явиносна протока

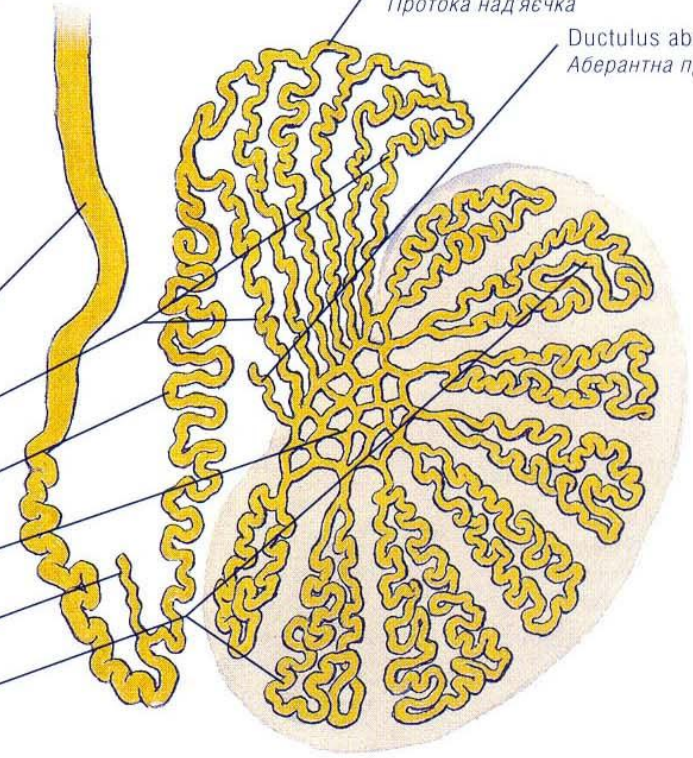
Ductuli efferentes
Виносні проточки

Ductus epididymidis
Протока над'яєчка

Rete testis Сітка яєчка
(в середостінні яєчка)

Ductulus aberrans
Аберантна проточка

Tubuli seminiferi contorti
Звивисті сім'яні трубочки



Схема

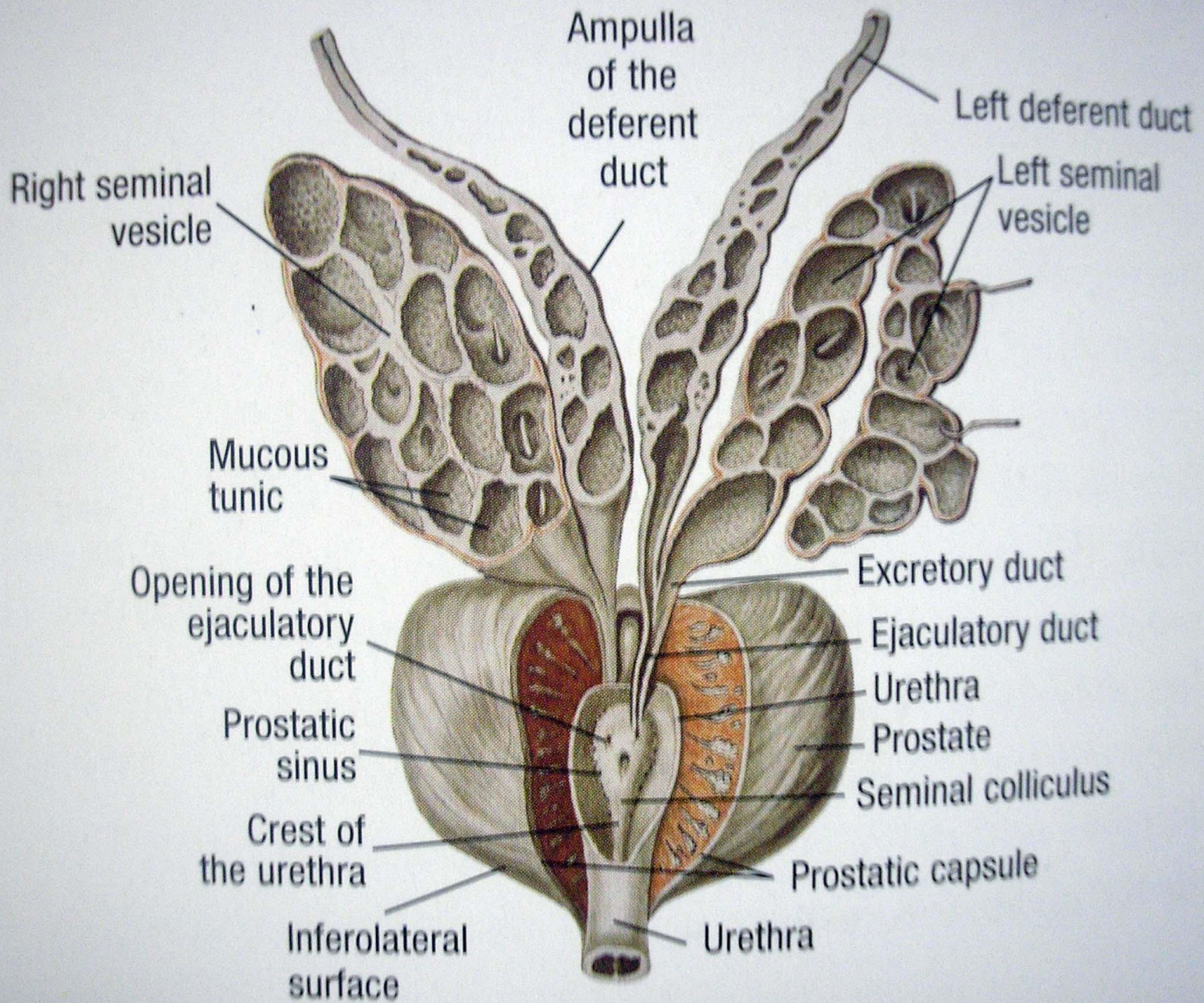
There are head,
body and tail of
epididymis. Sinus of
epididymis is situated
between testis and
body of epididymis.

The epididymis stores sperm as they mature, serves as a duct for the passage of sperm from the testis to the **seminal duct** (vas deferens, ductus deferens L.).

**The paired ductus
deferens are the
dilated continua-
tions of the epididy-
mides.**

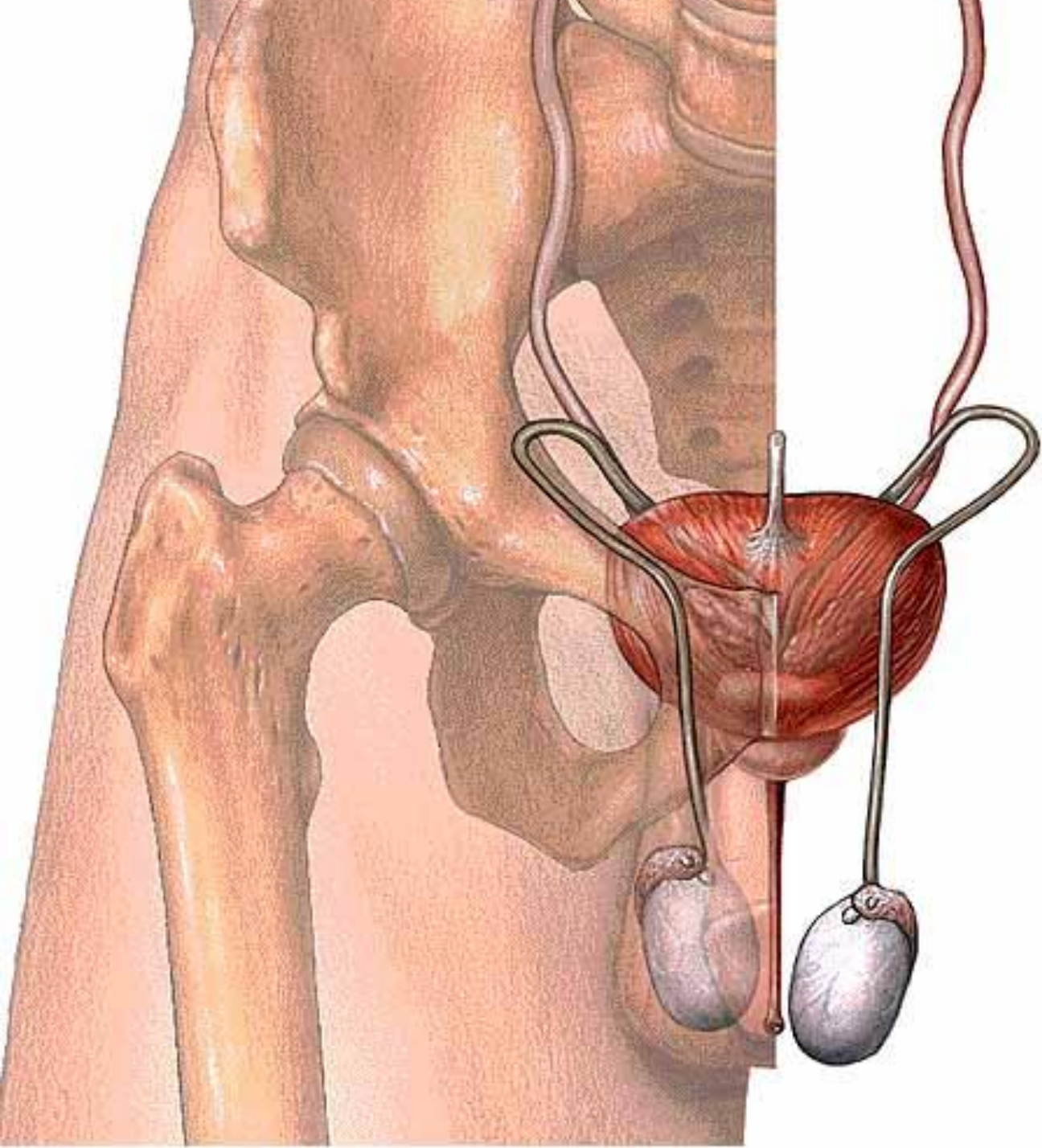
The ductus deferens is a fibromuscular tube that conveys sperm cells from the epididymis to the ejaculatory duct.

Also called the vas deferens (plural, vasa deferentia), it exits the scrotum as it ascends along the posterior border of the testis. From here, it enters the pelvic cavity and passes to the side of the urinary bladder, medial to the ureter. The **ampulla** of the ductus deferens is the terminal portion that joins the ejaculatory duct.



Portions of the ductus deferens: testicularis, funicularis, inguinalis, and pelvina.

The distal part of the ductus is dilated, and termed the **ampulla** of the **vas deferens** (ampulla ductus deferentis, L.).



Bruchpforte

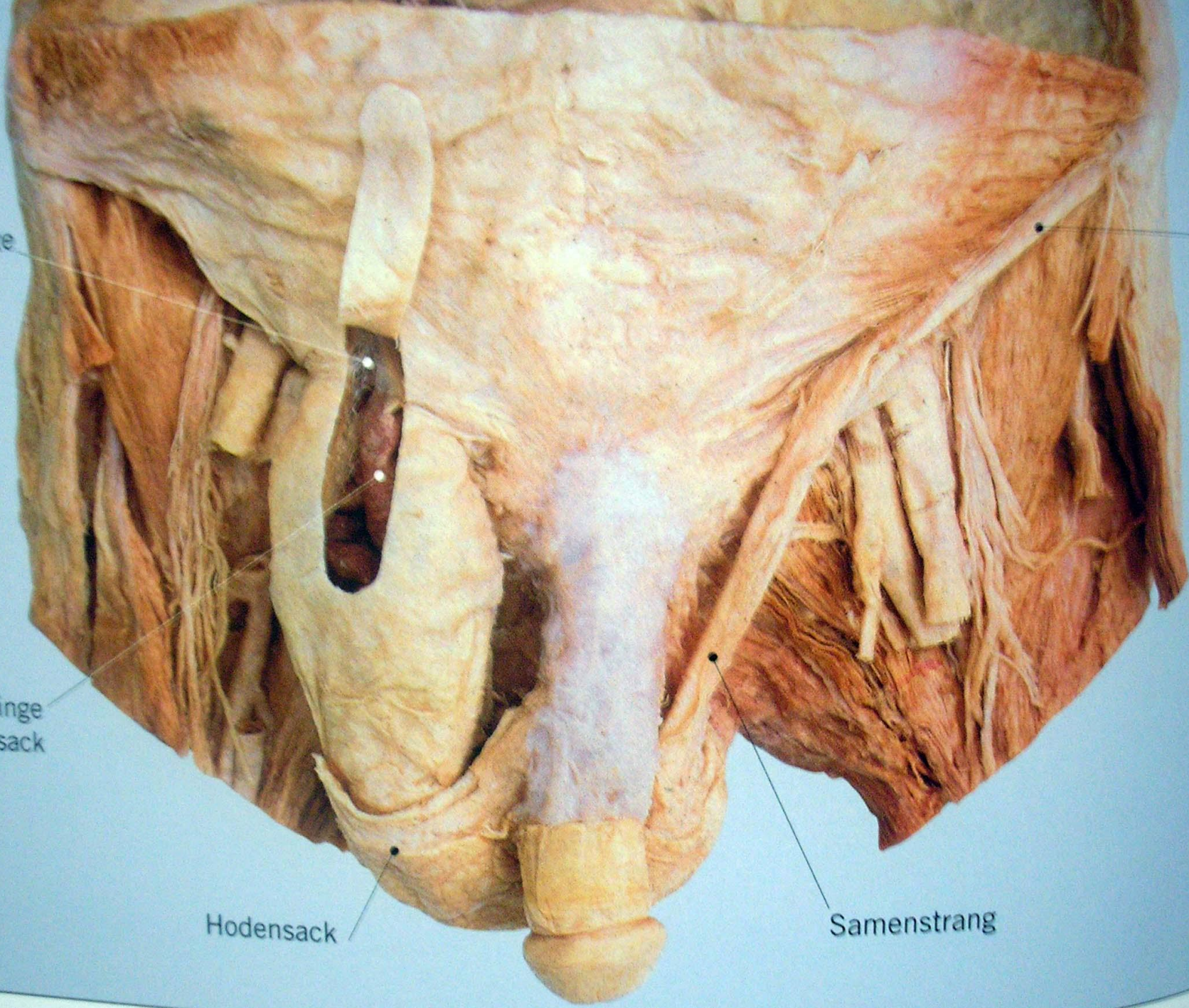
Leistenband

Darmschlinge im Bruchsack

Hodensack

Samenstrang

Abb. 5.22



The wall of the ductus is composed of three layers: an outer fibrous (tunica adventitia, L.), a middle muscular coat (tunica muscularis, L.), and an inner mucous coat (tunica mucosa, L.). The mucous coat forms longitudinal folds. Unstriated muscular coat consists of two layers: an outer, longitudinal in direction, and an inner, circular.

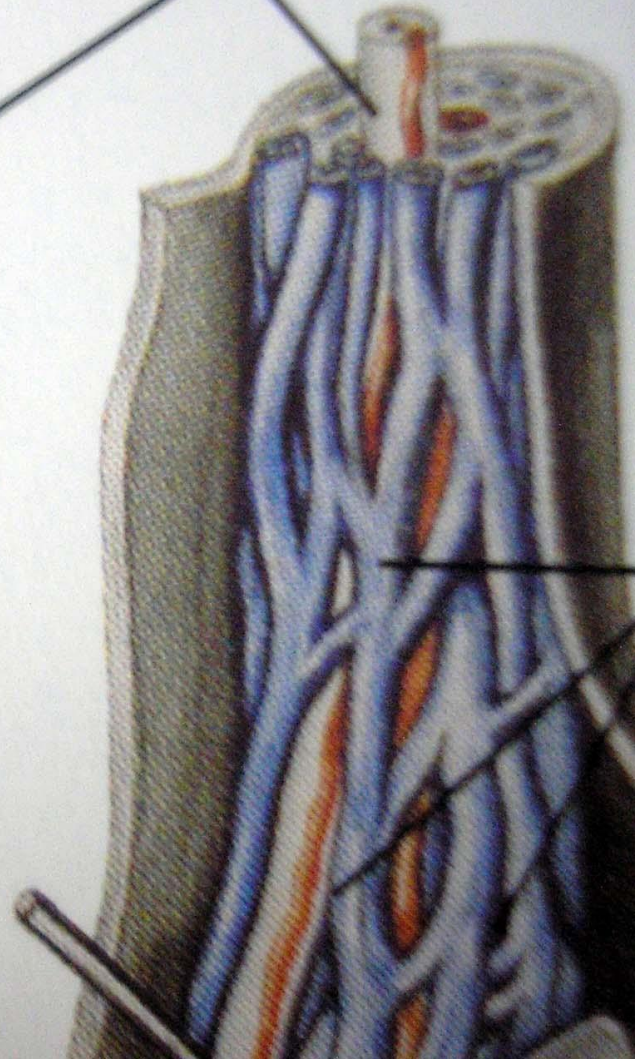
male

Mucous tunic

Deferent duct

Tunica adventitia

Muscular tunic



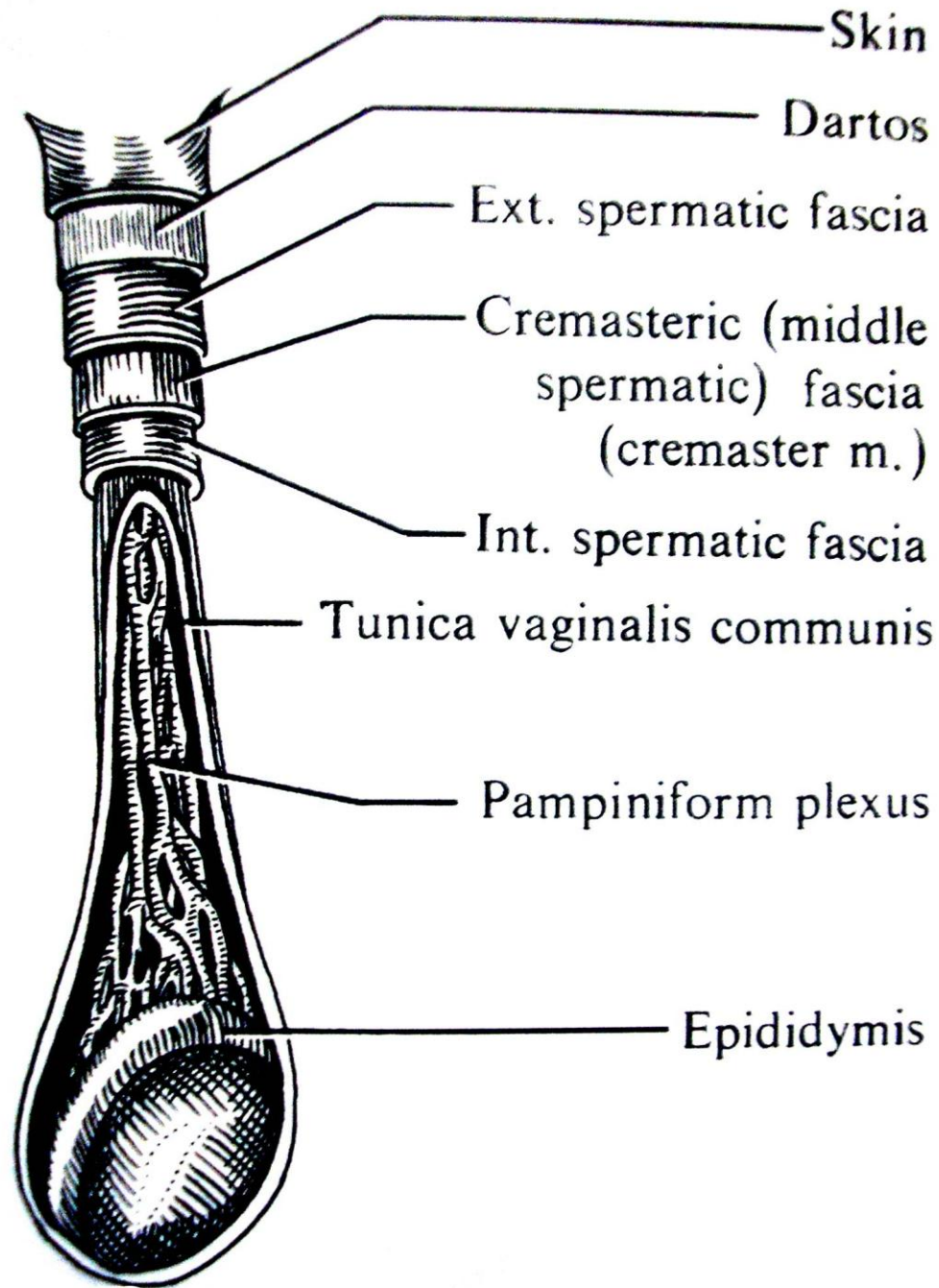
The testes are
situated in the
scrotum and
suspended there on
the spermatic
cords.

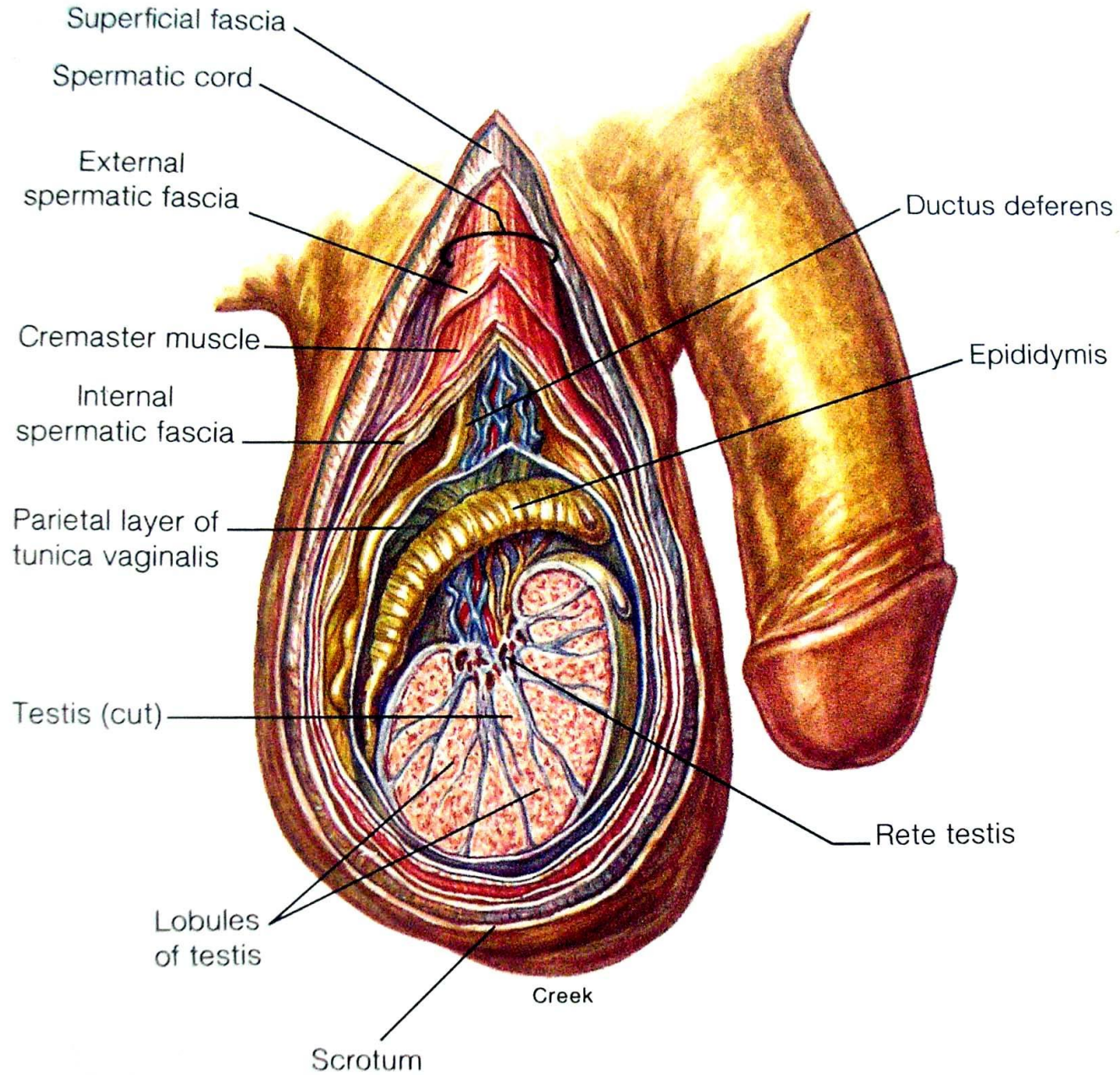
At an early period of fetal life the testes are contained in the abdominal cavity, behind the peritoneum. Before birth they descend to the inguinal canal, along which they pass with the spermatic cord, and, emerging at the subcutaneous inguinal ring, descend into the scrotum, becoming invested in their course by coverings derived from the serous, muscular, and fibrous layers of the abdominal parietes, as well as by the scrotum.

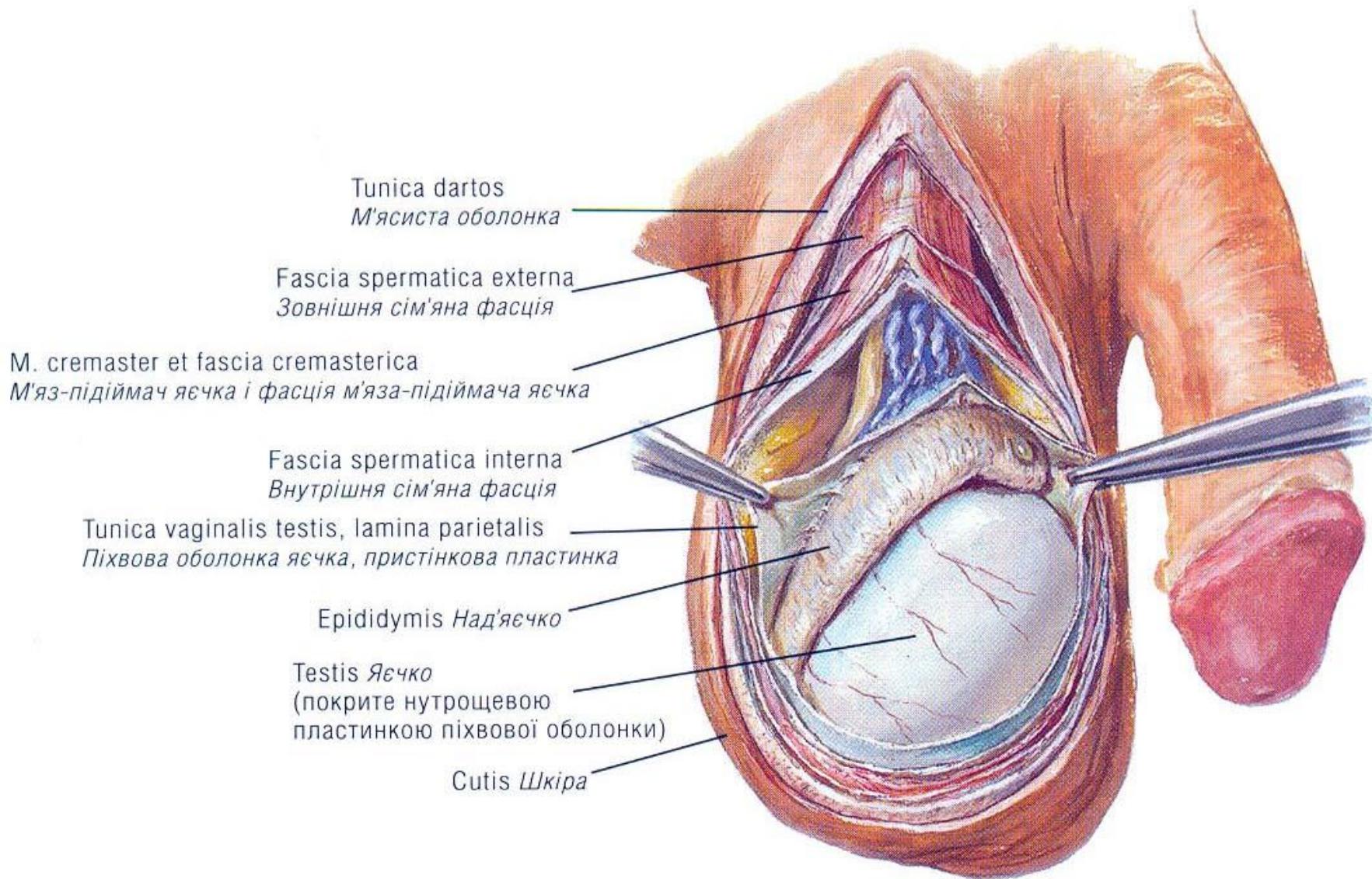
The **coverings** of the testes are:

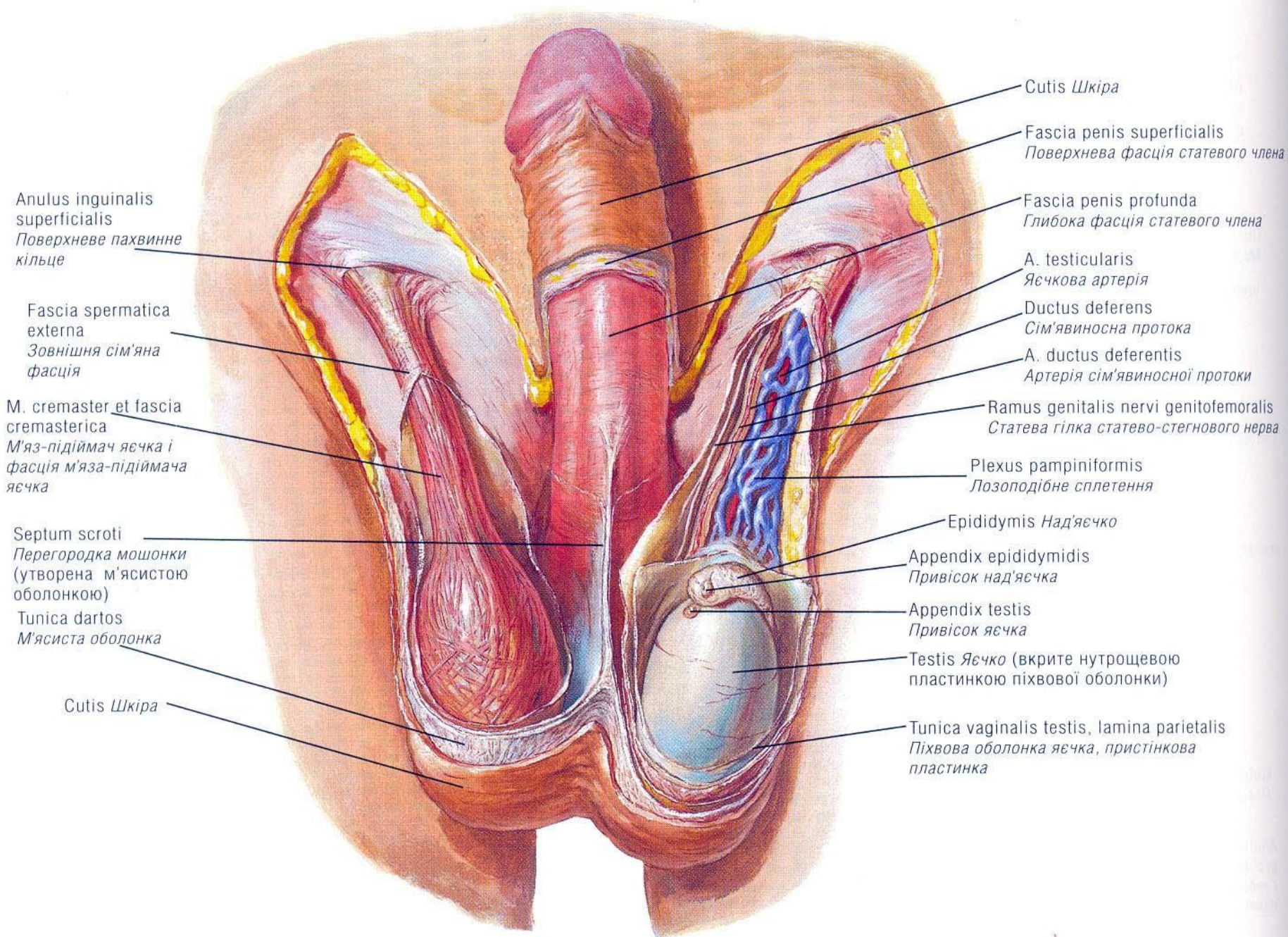
- the skin,
- dartos tunic (these two form scrotum),
- external spermatic fascia,
- cremasteric fascia, cremaster m.,
- internal spermatic fascia,
- and tunica vaginalis testis.

The last one is a closed serous sac which consists of two layers, parietal and visceral.









Anulus inguinalis superficialis
Поверхнєве пахвинне кільце

Fascia spermatica externa
Зовнішня сім'яна фасція

M. cremaster et fascia cremasterica
М'яз-підіймач яєчка і фасція м'яза-підіймача яєчка

Septum scroti
Перегородка мошонки (утворена м'ясистою оболонкою)

Tunica dartos
М'ясиста оболонка

Cutis Шкіра

Cutis Шкіра

Fascia penis superficialis
Поверхнєва фасція статевого члена

Fascia penis profunda
Глибока фасція статевого члена

A. testicularis
Яєчкова артерія

Ductus deferens
Сім'явиносна протока

A. ductus deferentis
Артерія сім'явиносної протоки

Ramus genitilis nervi genitofemoralis
Статева гілка статево-стегнового нерва

Plexus pampiniformis
Лозоподібне сплетення

Epididymis Над'яєчко

Appendix epididymidis
Привісок над'яєчка

Appendix testis
Привісок яєчка

Testis Яєчко (вкрите нутрощевою пластинкою піхвової оболонки)

Tunica vaginalis testis, lamina parietalis
Піхвова оболонка яєчка, пристінкова пластинка

The vaginal serous space (cavum vaginale, L.) is between the lamina parietalis and lamina visceralis of the tunica vaginalis testis. The visceral layer is intimately fused with the tunica albuginea of the testis and extends also into the epididymis.

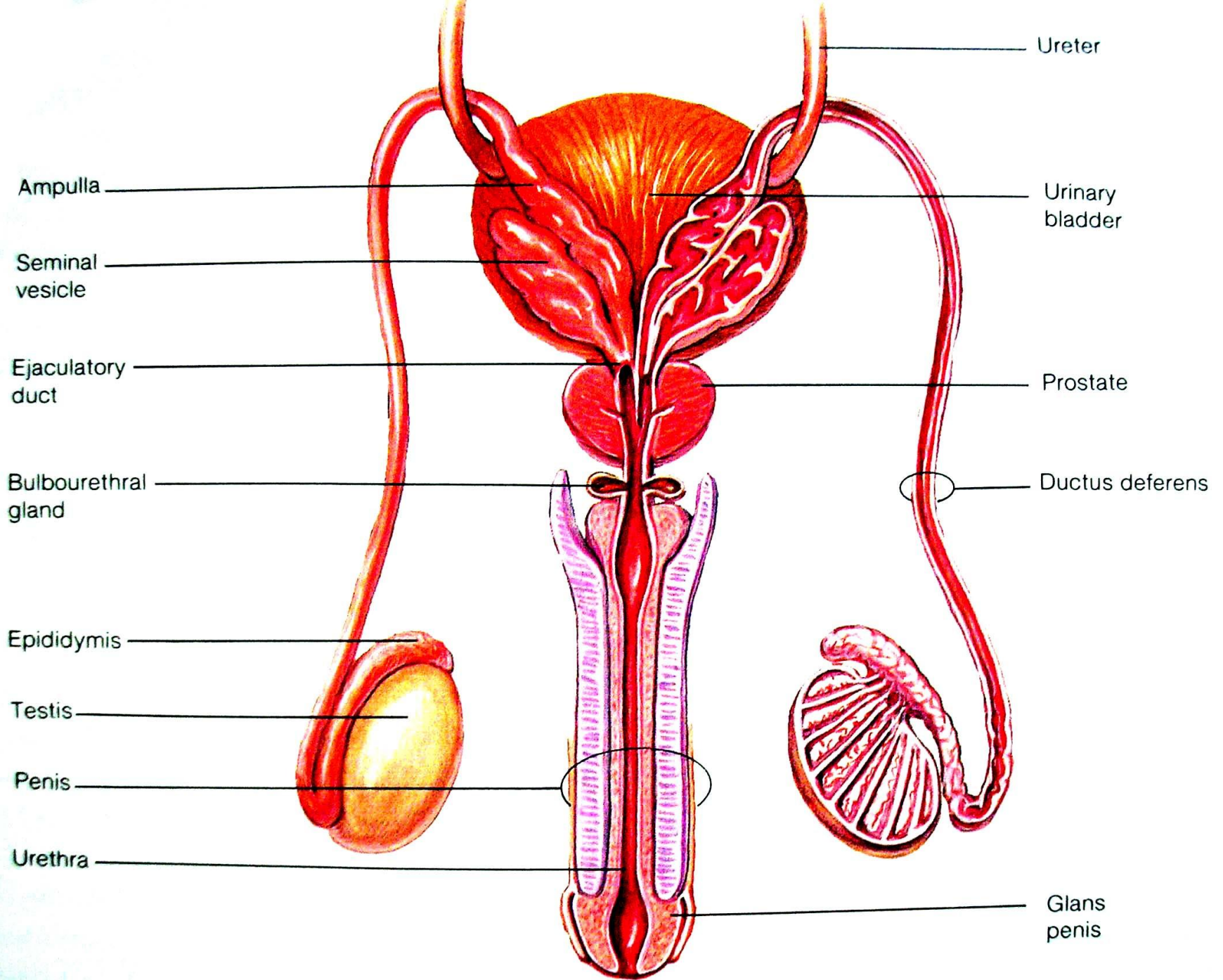
The **spermatic cord** (funiculus spermaticus, L.) are formed only after the testes descend into the scrotum from the abdominal cavity, where they are developed. The length of the spermatic cord is 20 cm.

It consists of the ductus deferens, and its arteries and veins; the testicular arteries, and veins; lymphatic vessels and nerves.

The spermatic cord extends as a whole structure only between the posterior margin of the testis and the deep inguinal ring.

The ducts that transport sperm cells include the:

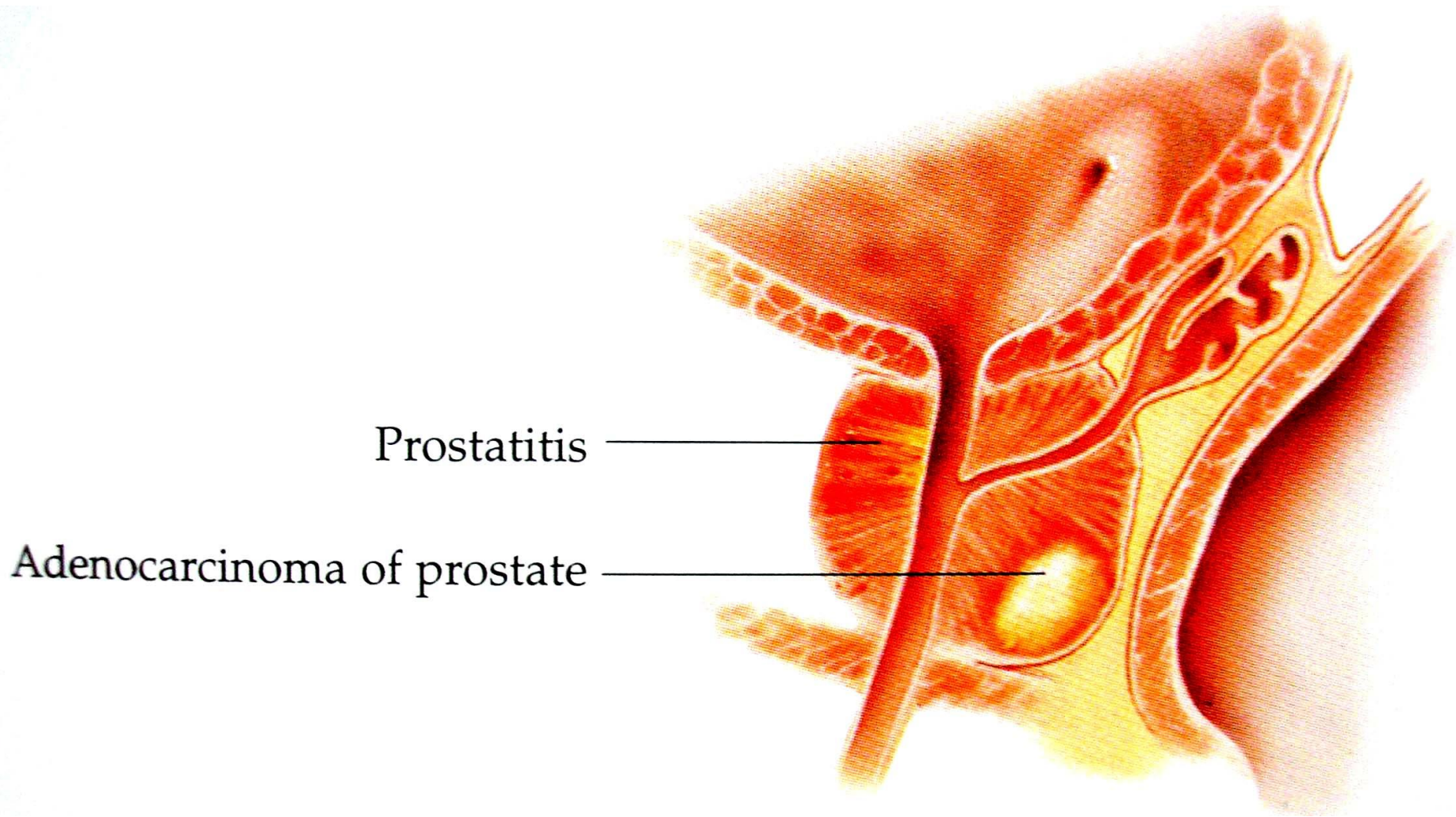
- straight seminiferous tubules,**
- rete testis,**
- ductuli efferentes testis,**
- ductus epididymis,**
- ductus deferens,**
- ductus ejaculatorius**
and urethra.



The **seminal vesicles** (vesiculae seminales, L.) are two lobulated membranous pouches, situated between the fundus of the bladder and the rectum, which secrete a fluid to be added to the secretion of the testis. The seminal vesicle has **ductus excretorius**.

The ejaculatory duct (ductus ejaculatorius, L.) are two in number.

Each is formed by the union of the **ductus excretorius** of the seminal vesicle with the **ductus deferens**, and is about 2 cm long. They commence at the base of the prostate gland and drains into the prostatic part of the male urethra.



Prostatitis

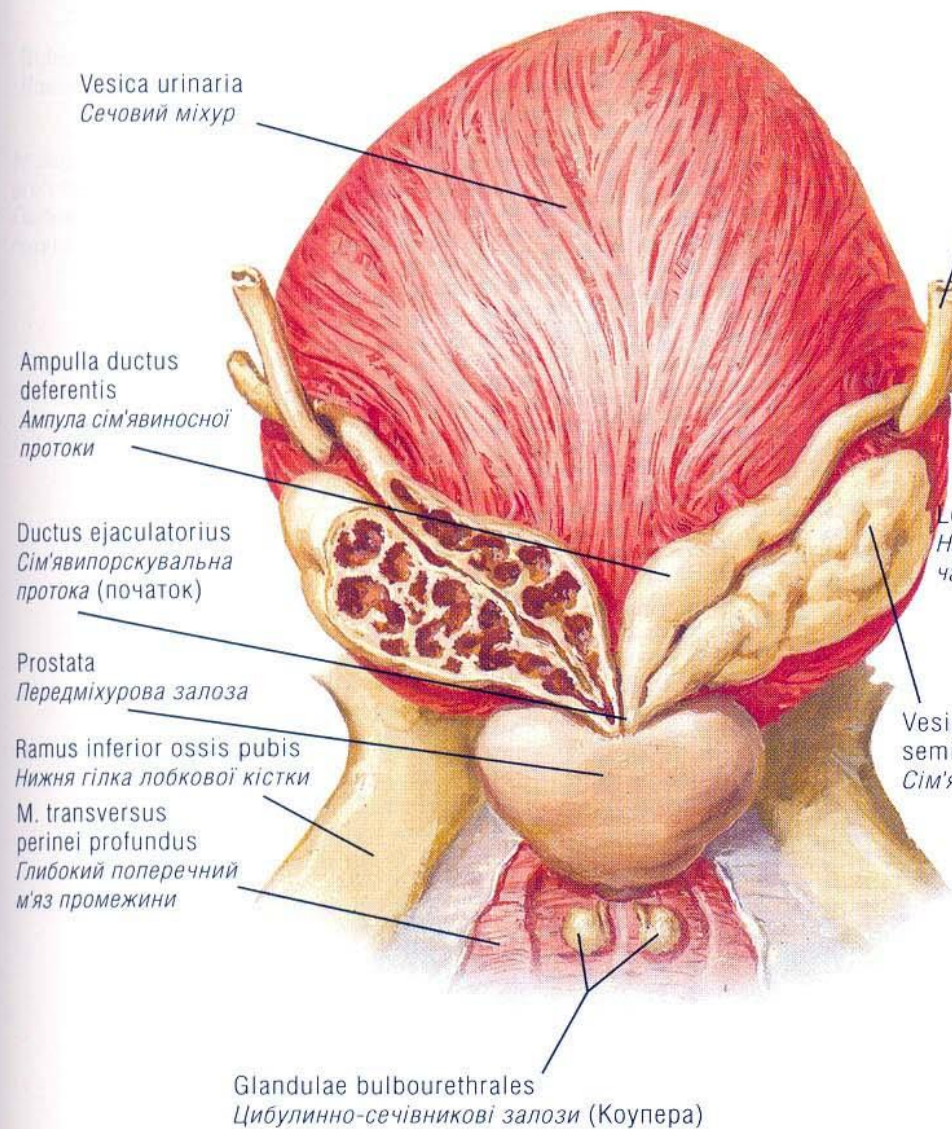
Adenocarcinoma of prostate

The firm **prostate** lies immediately below the urinary bladder and surrounds the beginning portion of the urethra. The prostate is enclosed by a fibrous capsule and divided into lobules by the urethra and by the ejaculatory ducts that extend through the gland. The ducts from the lobules open into the urethra. The thin, milky-colored prostatic secretion assists sperm cell motility as a liquefying agent. The prostate also secretes the enzyme acid phosphatase.

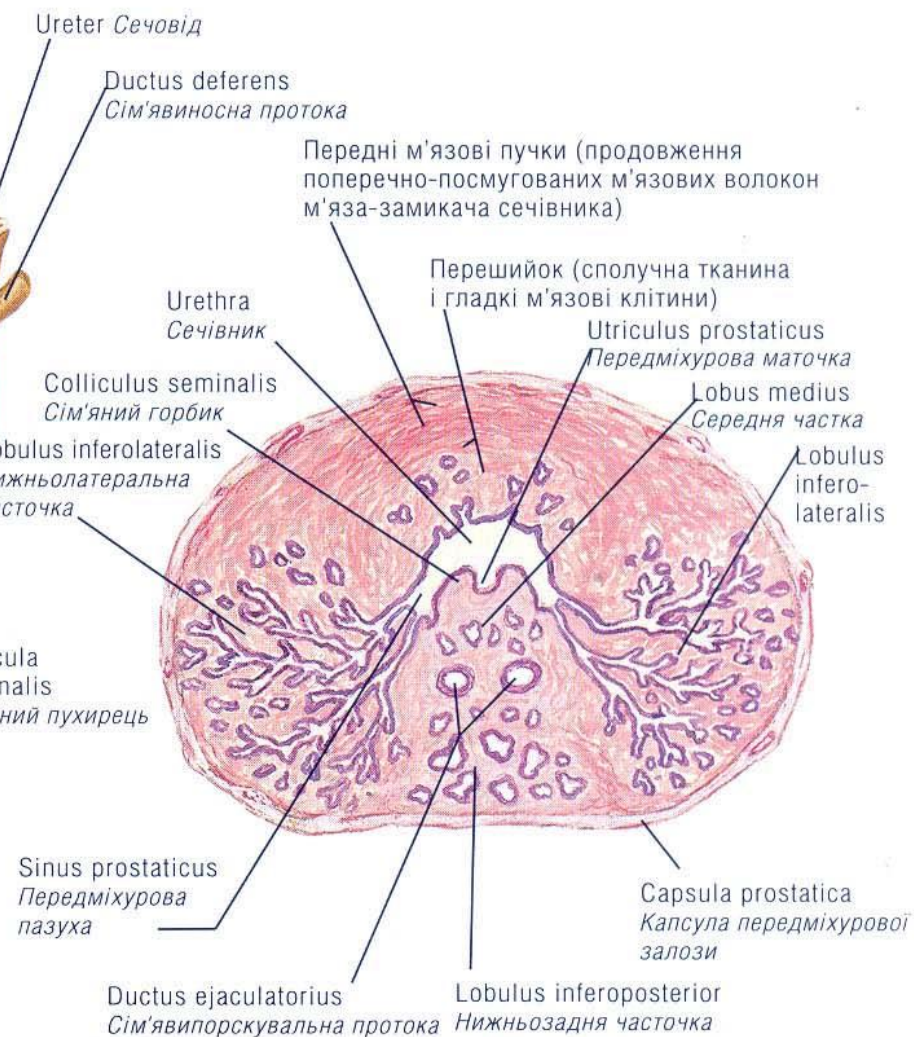
The paired, pea-sized **bulbourethral glands** are located beneath the prostate, where their secretions drain into the urethra upon sexual excitement prior to ejaculation.

The mucoid secretion from these glands coats the lining of the urethra to neutralize the pH of the urine residue. It also lubricates the tip of the penis in preparation for coitus.

Передміхурова залоза (prostata), сім'яні пухирці



Вигляд ззаду



Поперечний переріз передміхурової залози

Secretion of the seminal vesicles, prostate gland, and bulbourethral glands, together with the sperm, make up the semen. Semen, also called seminal fluid, is the substance discharged during ejaculation.

Generally, between 1.5 and 5.0 ml of semen are ejected during ejaculation. The bulk of the fluid (about 60%) is produced by the seminal vesicles, and the remainder (about 40%) is contributed by the prostate. Spermatozoa account for less than 1% of the volume.

There are usually between 60 and 150 million sperm cells per milliliter of ejaculate.

In the condition of oligospermia, the male ejaculates fewer than 10 million sperm cells per milliliter and is likely to have fertility problems.

The saclike scrotum is suspended immediately behind the base of the penis.

The functions of the scrotum are to support and protect the testes and to regulate their position relative to the pelvic region of the body. The soft, textured skin of the scrotum is covered with sparse hair in mature males and is darker in color than most of the other skin of the body. It also contains numerous sebaceous glands.

Located within the scrotum, the testes produce sperm cells and androgens.

Androgens regulate spermatogenesis and the development and functioning of the secondary sex organs.

The **penis** (penis, L.) together with the scrotum constitute the external male genital organs.

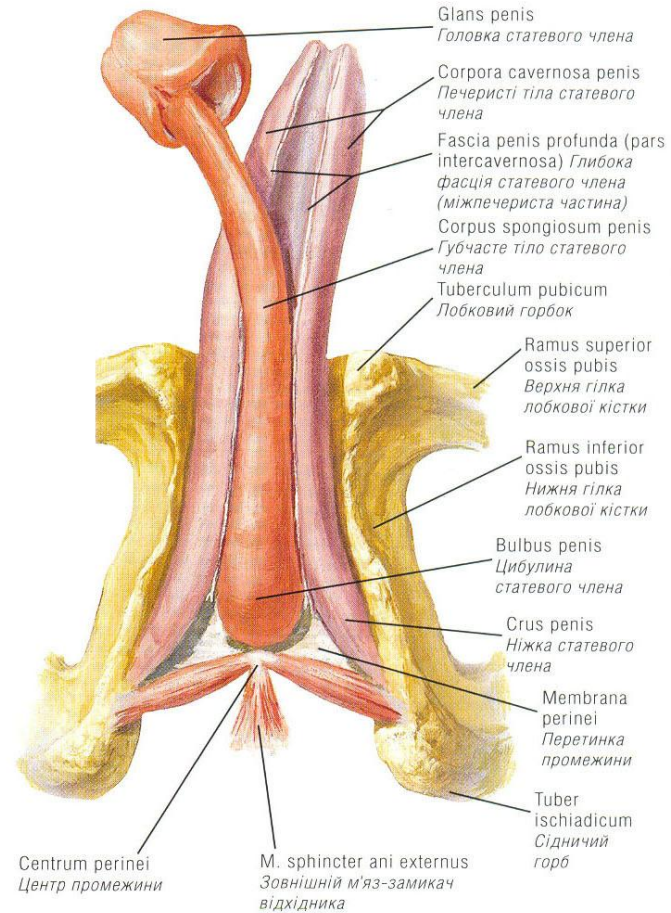
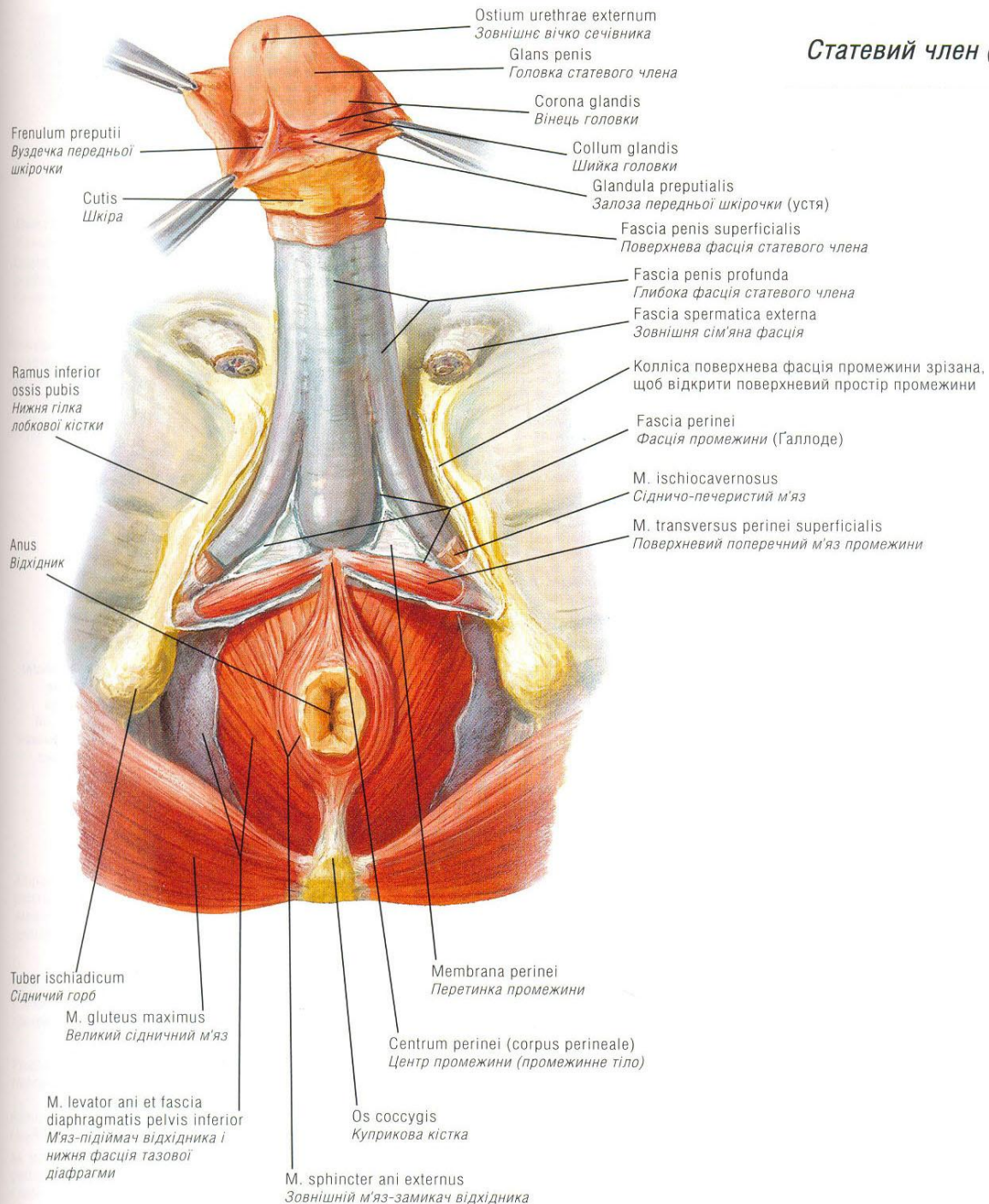
The penis carries urine to the outside during urination and transports semen during ejaculation.

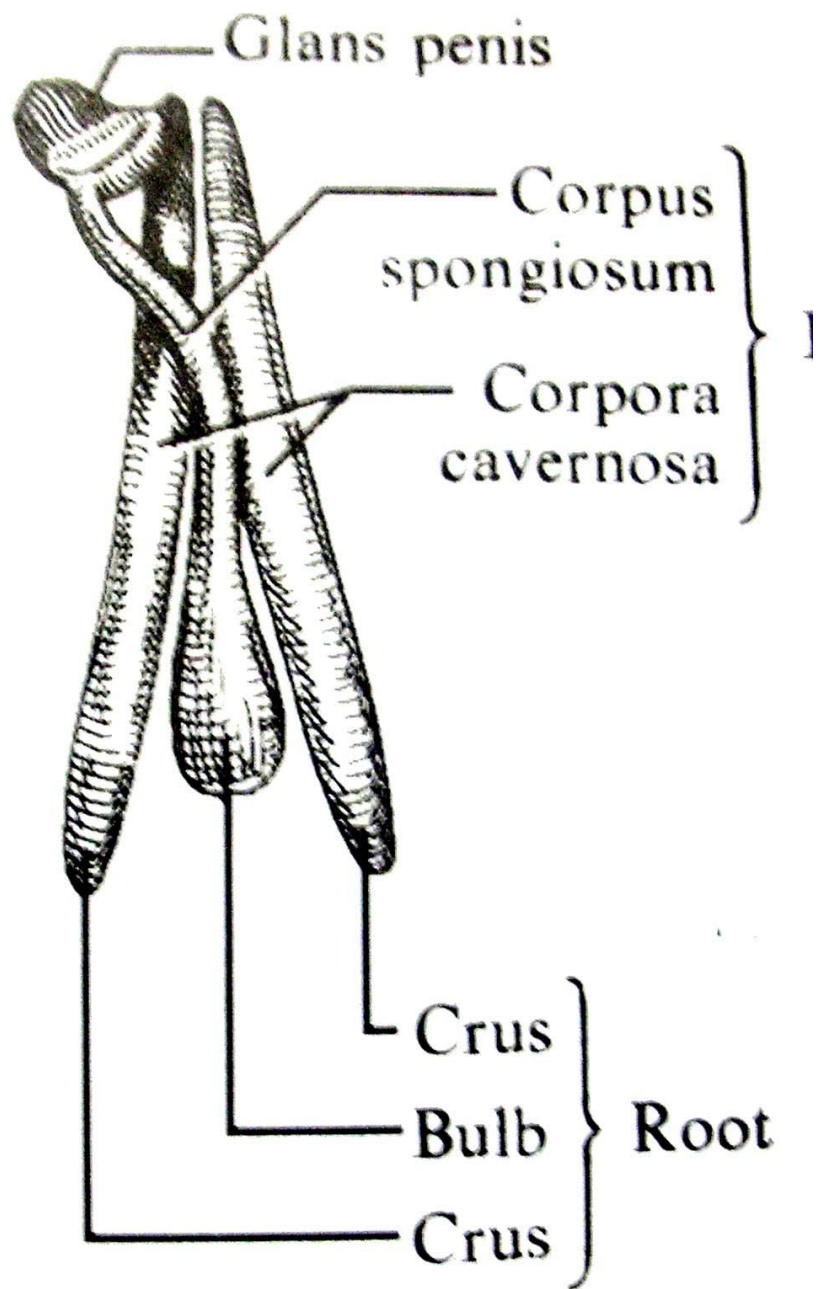
It contains the urethra and three strands of erectile tissue:

- two **corpora cavernosa** and
- the **corpus spongiosum**.

Portions of the penis: radix, corpus, glans.

Статевий член (penis)

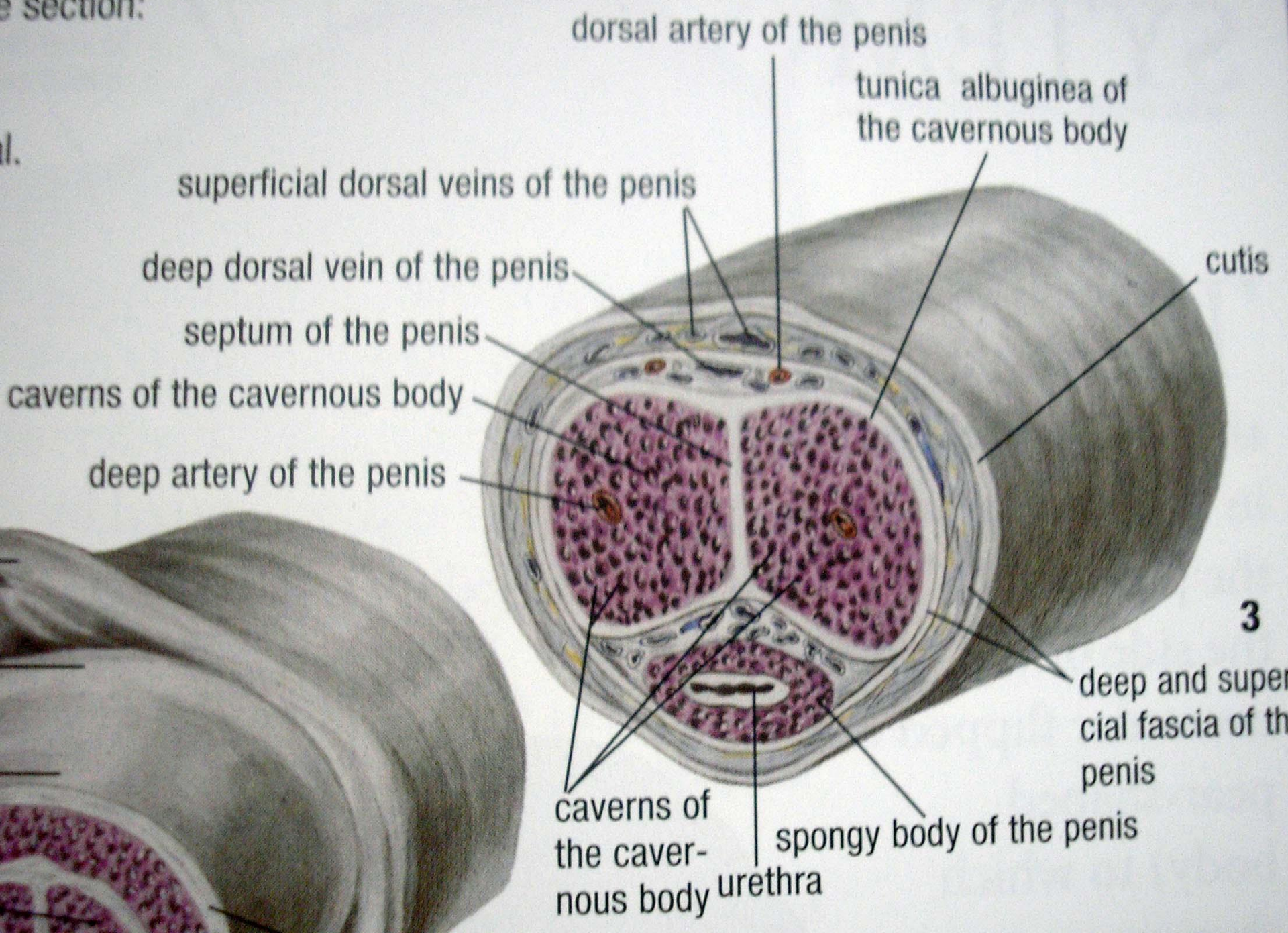




FROM BELOW

e section:

il.



dorsal artery of the penis

tunica albuginea of the cavernous body

superficial dorsal veins of the penis

deep dorsal vein of the penis

septum of the penis

caverns of the cavernous body

deep artery of the penis

cutis

3

deep and superficial fascia of the penis

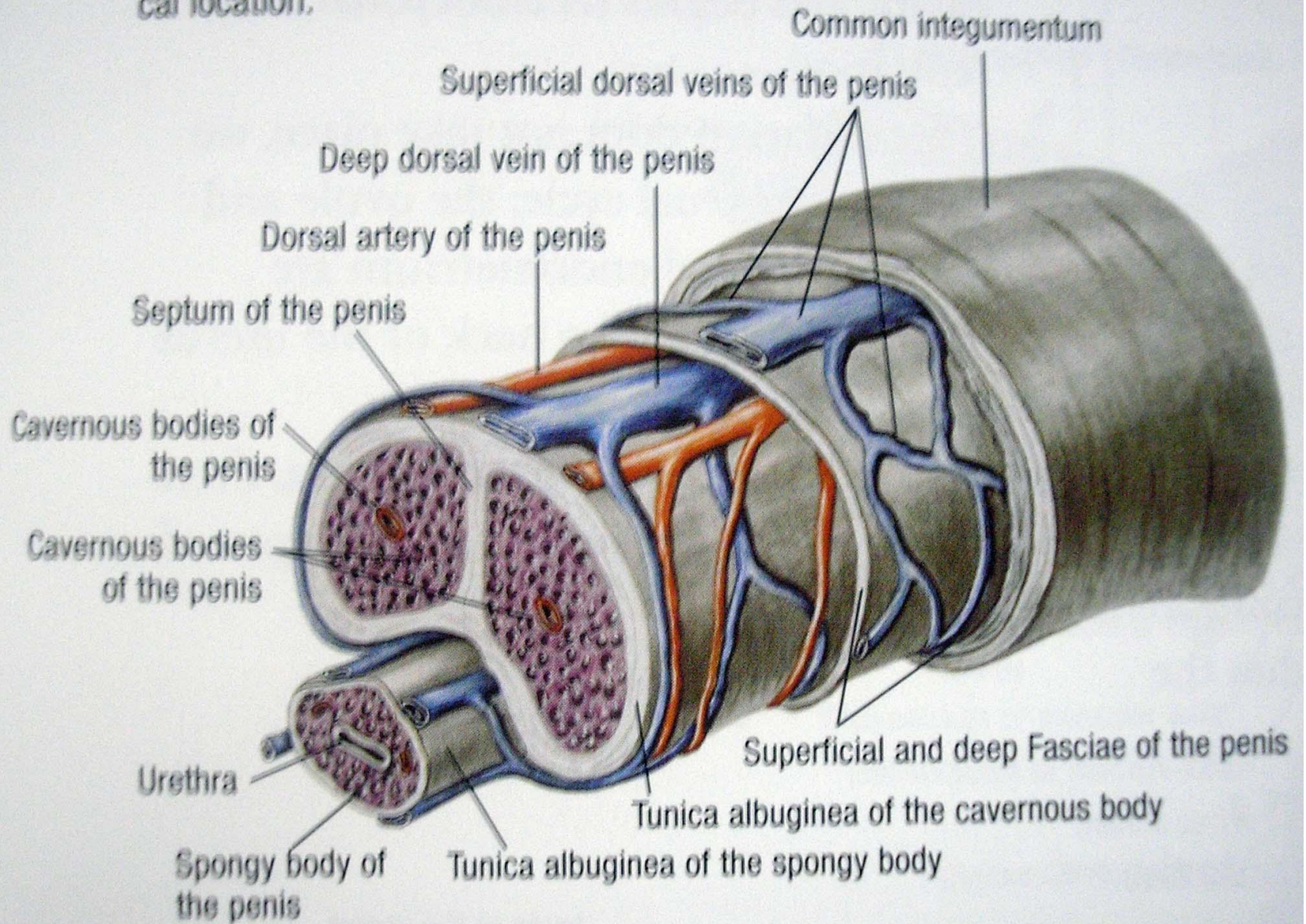
caverns of the cavernous body

spongy body of the penis

urethra

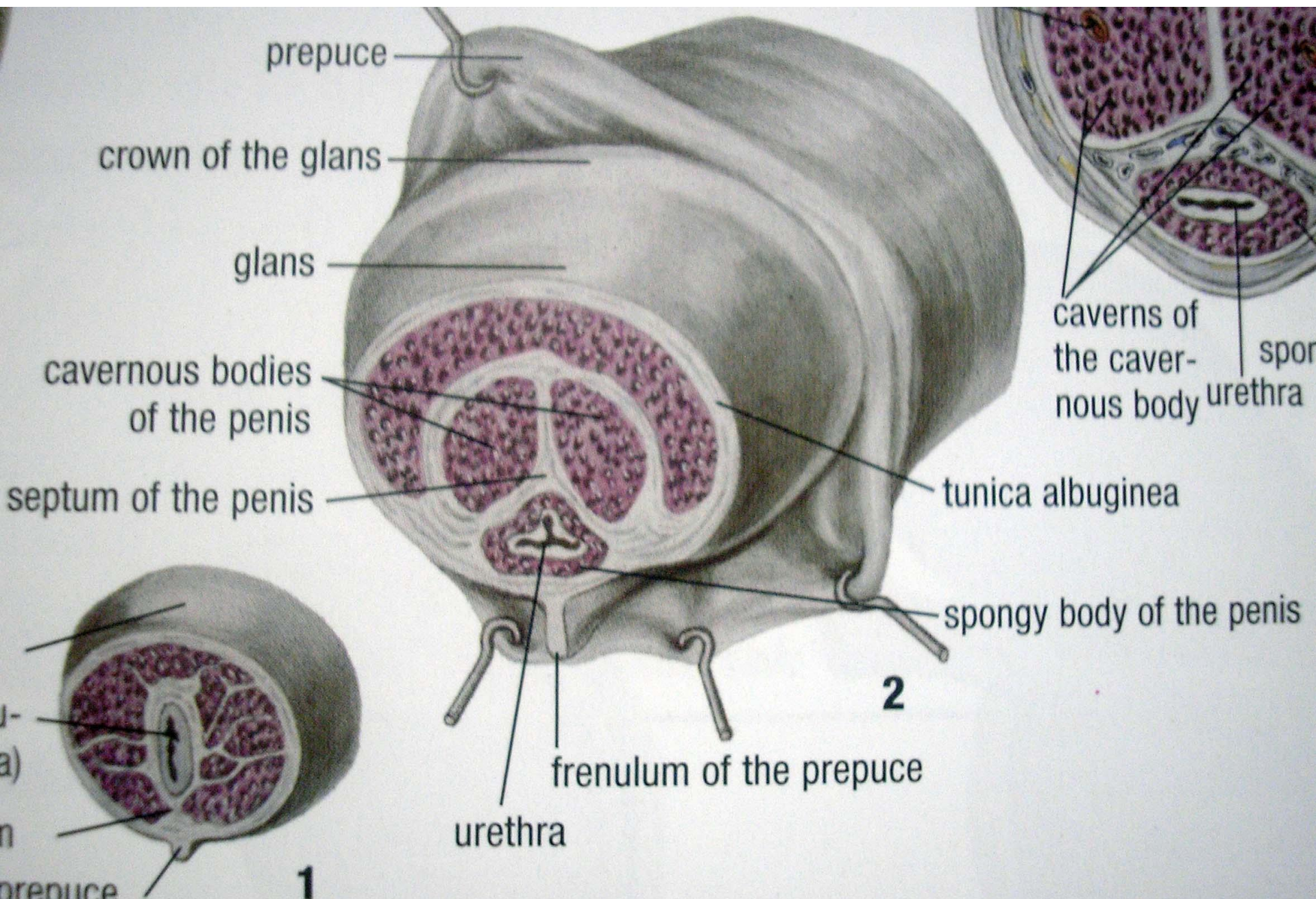
▼ **Vessels of the penis**

Main blood vessels of the penis and their anatomical location.



At the base of the glans the skin forms a free fold called the *prepuce* (prepucium, L.), or foreskin.

On the inferior surface of the glans the prepuce is joined to the skin of the glans by a fold, the *frenulum of the prepuce*.



prepuce

crown of the glans

glans

cavernous bodies
of the penis

septum of the penis

caverns of
the cavernous
body

spongy
urethra

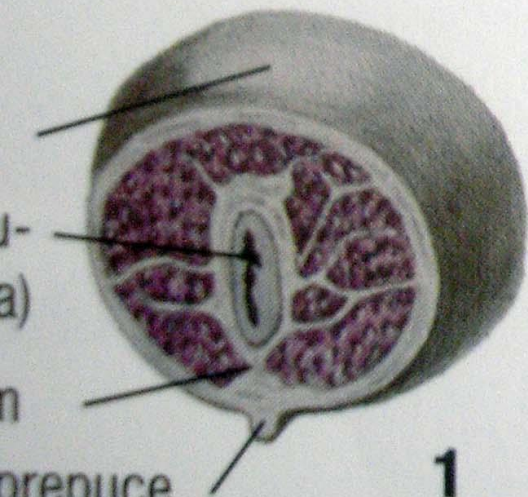
tunica albuginea

spongy body of the penis

2

frenulum of the prepuce

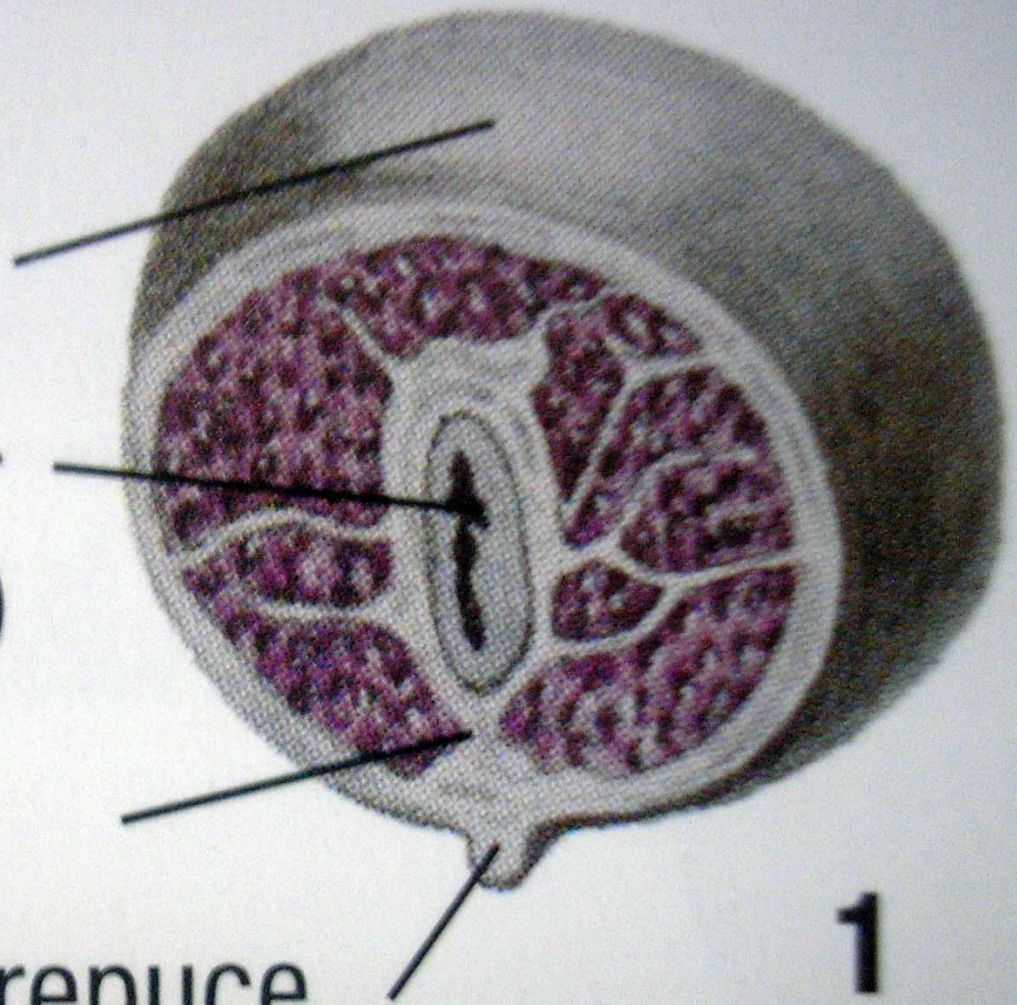
urethra



1

prepuce

glans
urethra (navicular fossa)
gland septum
frenulum of the prepuce



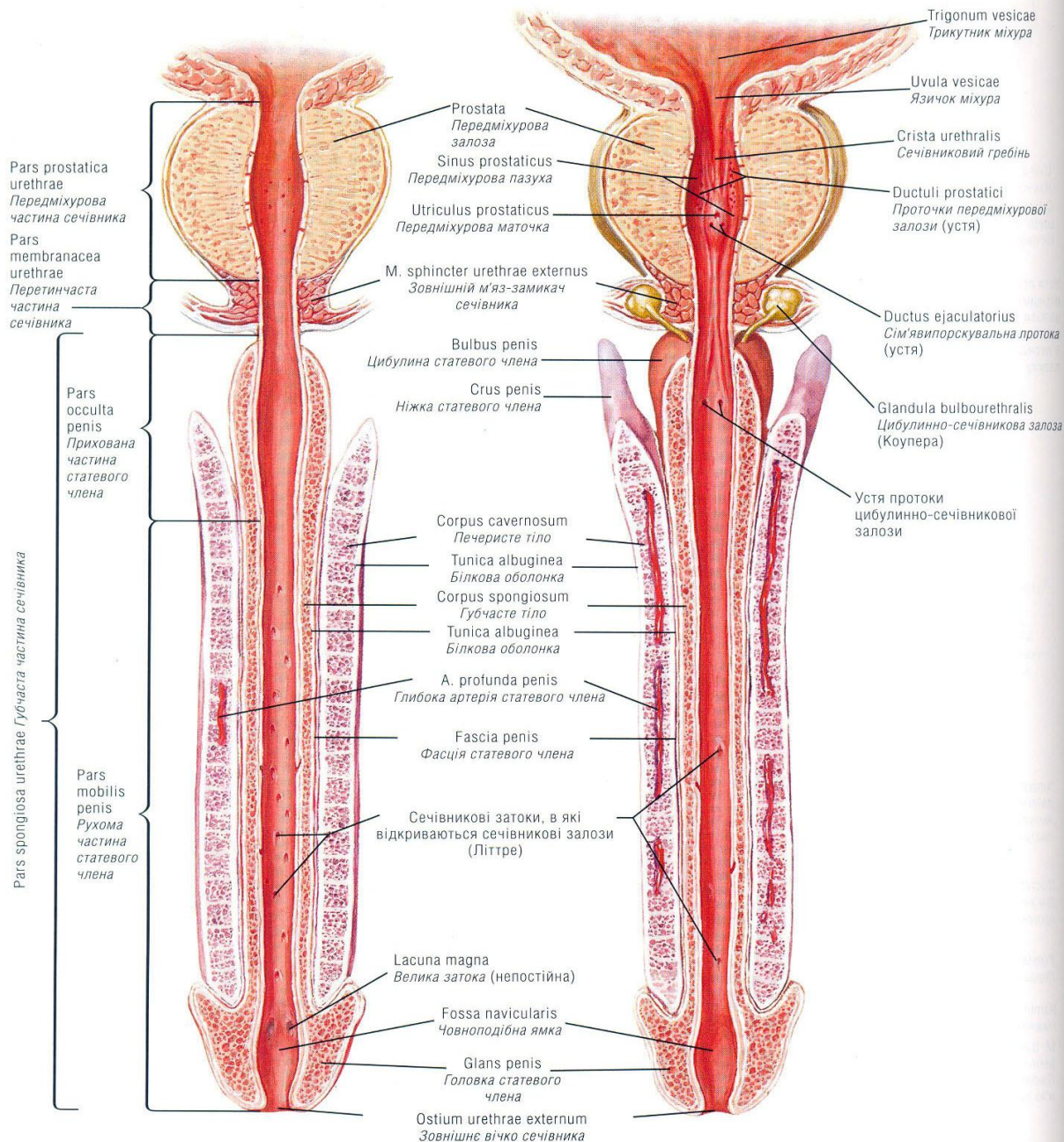
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The Male Urethra
extend from the internal
urethral orifice in the
urinary bladder to the
external urethral orifice at
the end of the penis.

Its length varies from 17.5 to 20.0 cm; and it is divided into three portions:

- the *prostatic*,**
- membranous*,**
- and *spongious*.**

Чоловічий сечівник (urethra masculina)



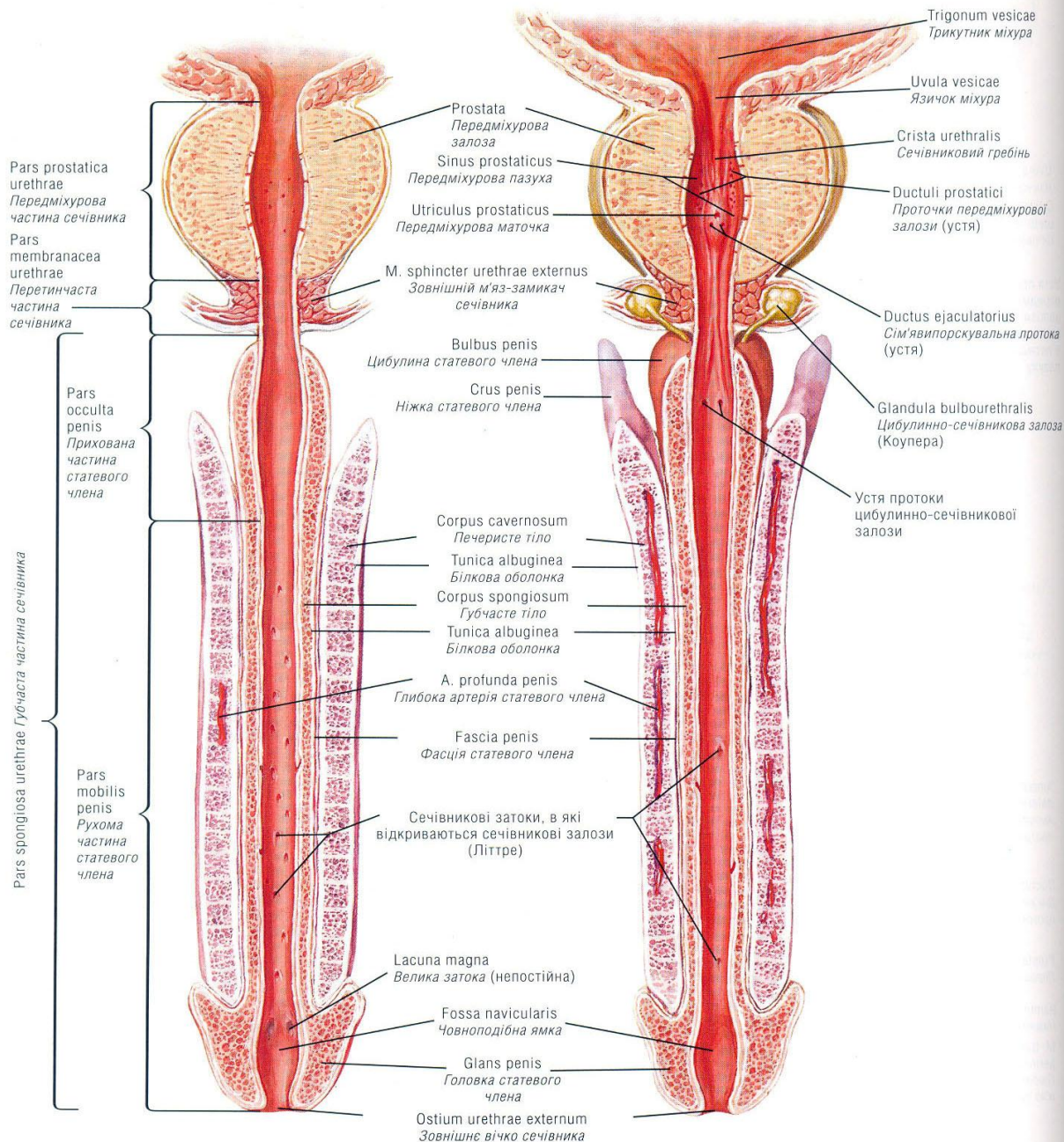
Нижня стінка чоловічого сечівника

Верхня стінка чоловічого сечівника

The prostatic portion is the widest, and is about 3 cm long. The membranous portion is the shortest, least dilatable, and the narrowest part of the canal. The bulbourethral glands open here. The membranous portion is completely surrounded by the fibers of the sphincter urethrae membranaceae.

The spongy portion is the longest part of the urethra, and is contained in the corpus spongiosum of the penis.

Чоловічий сечівник (urethra masculina)



Нижня стінка чоловічого сечівника

Верхня стінка чоловічого сечівника

Передміхурова залоза (prostata), сім'яні пухирці

