Kidneys, ureters, bladder
- Visceral osteopathy -

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The author of the Seminar

- Graduated D.O. in 2005 – 6 years full time studies
- Private practice near Lyon – FR
- Since 2018 : Anatomy teacher in one Osteopathy school (Lyon)
- 2006-2017 : Visceral Osteopathy teacher in Lyon
- 2011-2015 : Visceral and Urogenital Osteopathy teacher in Nantes
- Since 2014 : Collaborator of Finet and Williame D.O. : Workshops in France, Belgium, Spain, Germany… Structuring the osteopathic treatment : simplified procedure, visceral and urogenital osteopathy on Evidence Based Medicine and own Researches.
- http://deltadyn.be

Link to booklet

- http://exercicesdestill.net/download/kidneys

Kidneys

Anatomy

- Bean shape organs,
- H = 10-12 cm, w = 5-6cm and thickness = 3cm, 150 g,
- Left kidney bigger, right kidney lower (liver),
- Retroperitoneal organs, surrounded by fat.

- Outside of the transverse processes of T11 to L2-L3,
- **Height at the back :**
  - **Right kidney** : Top in the K11-K12 space, bottom = L3,
  - **Left kidney :** Top = K11, bottom = L2-L3 discus.

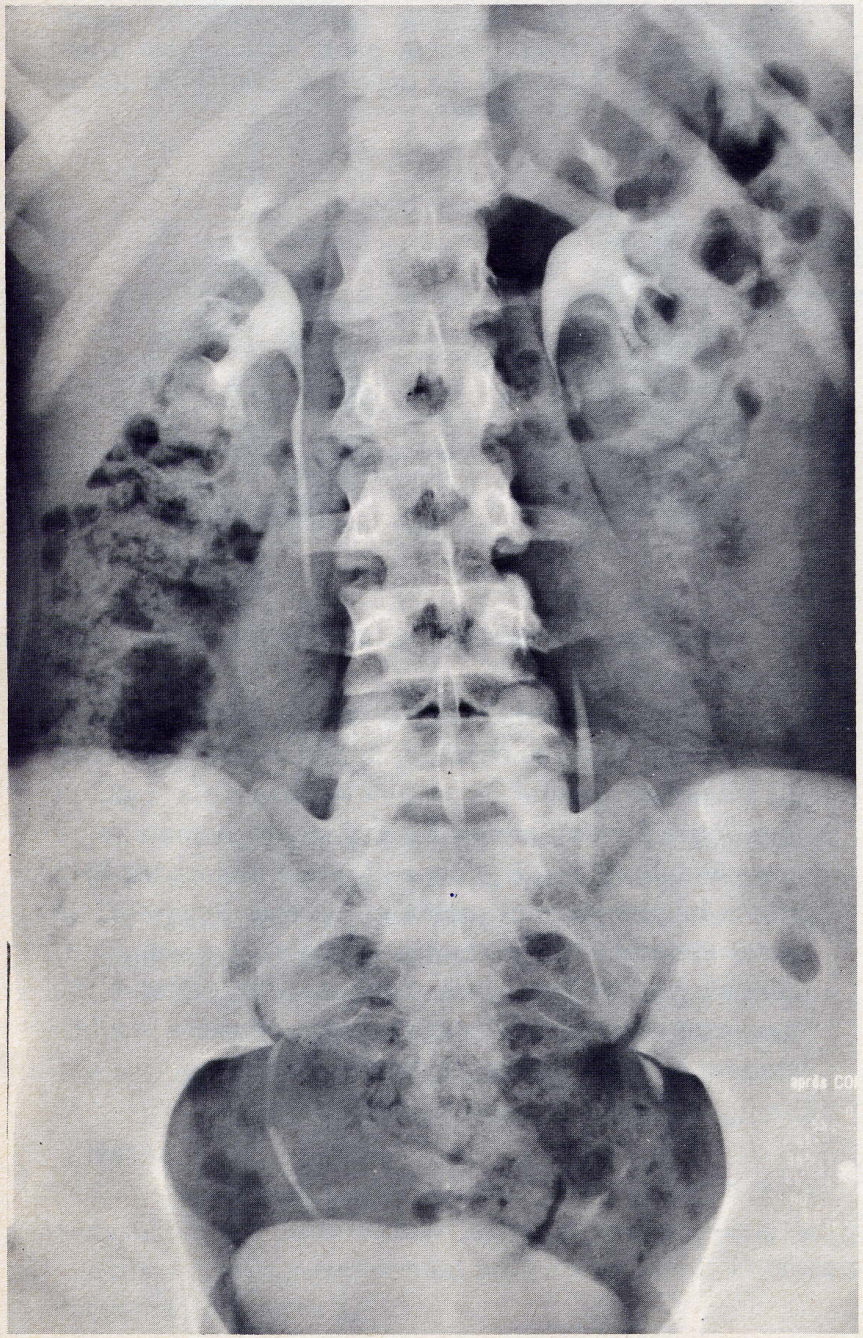
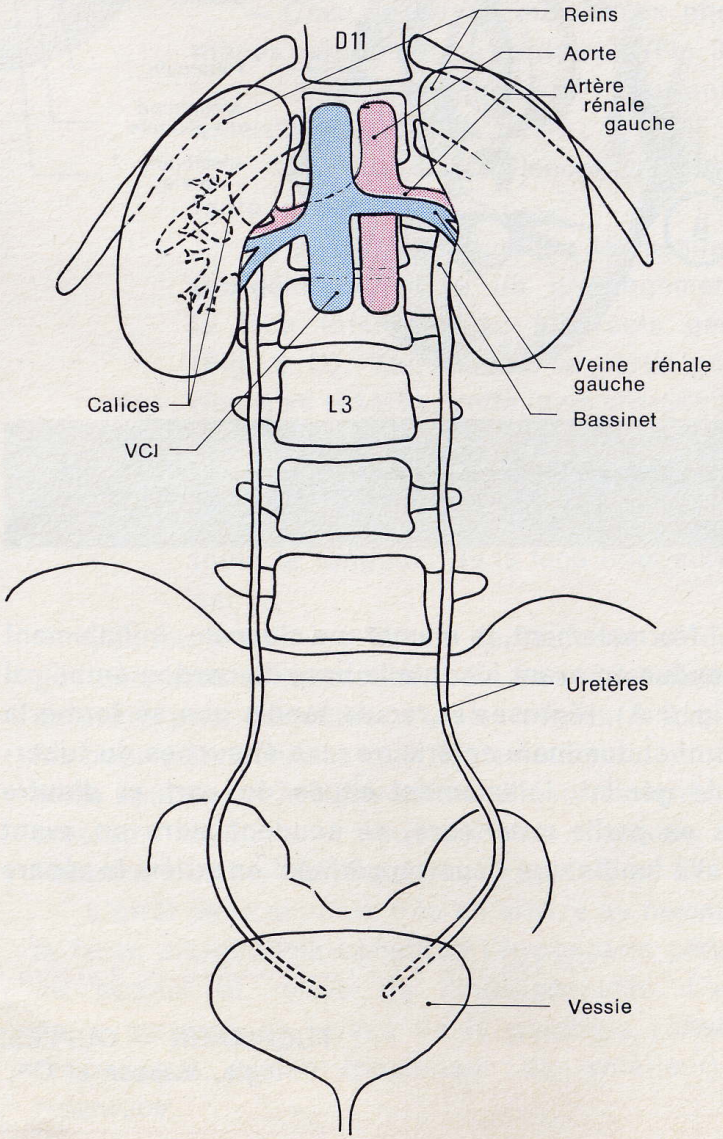


Fig. 10. — A) *Urographie normale montrant l'ensemble de l'appareil excréteur urinaire.*

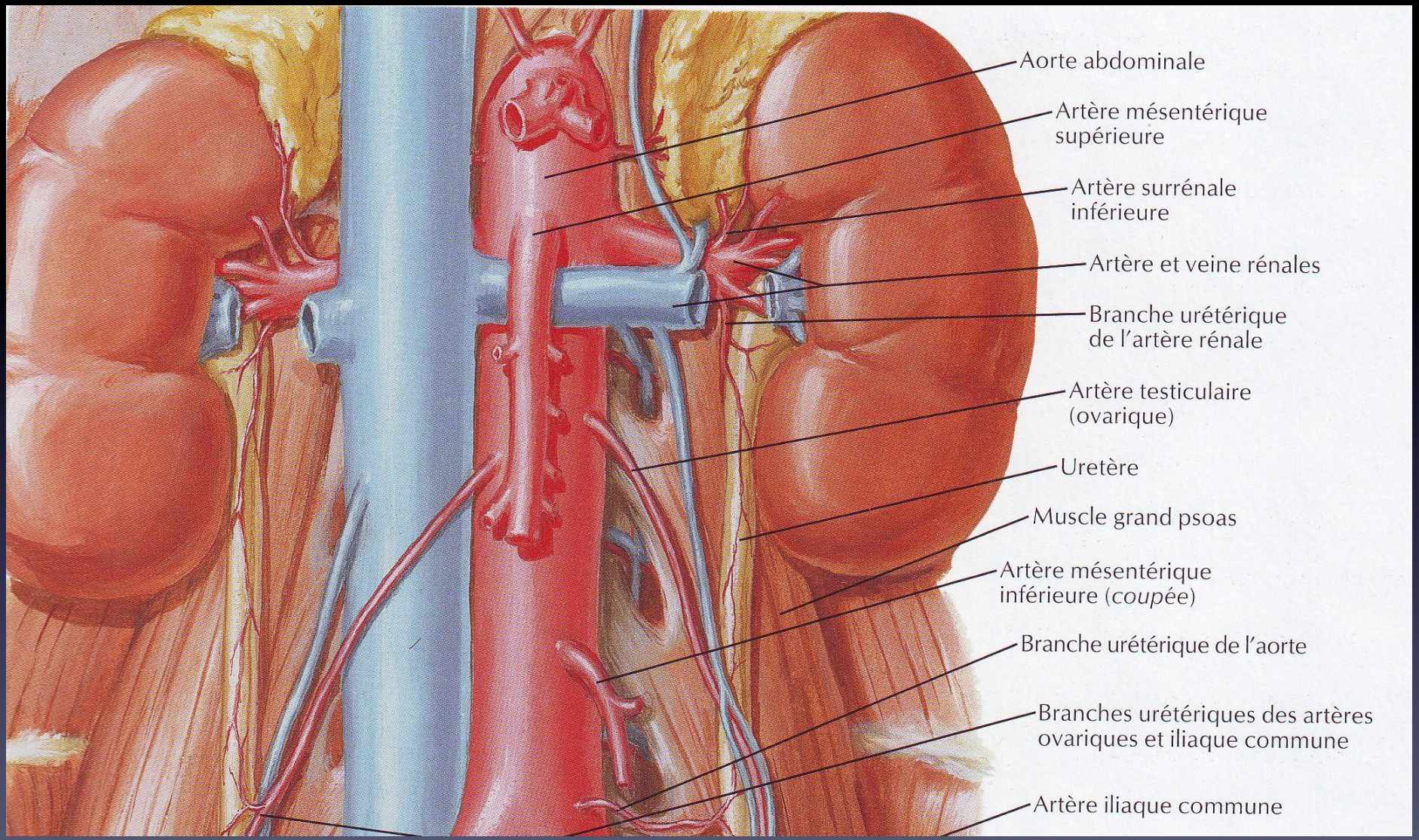
B) *Ci-dessous, calque de l'urographie schématisant les éléments.*



- 2 axis :
  - **Vertical axis** : oblique downward, outward and slightly backward,
  - **Transversal axis** : the anterior face looks forward and outward.

Blood supply

- Pedicle on the concave face :
  - Renal art. and lymphatic vessels,
  - Renal vein, ureter.
- Renal blood takes 20% of the blood flow,
- Right renal art. is longer, left renal vein is longer,
- Renal arteries come from aorta (above sup. mesenteric art.).


Aorte abdominale
Artère mésentérique supérieure
Artère surrénale inférieure
Artère et veine rénales
Branche urétérique de l'artère rénale
Artère testiculaire (ovarique)
Uretère
Muscle grand psoas
Artère mésentérique inférieure (*coupée*)
Branche urétérique de l'aorte
Branches urétériques des artères ovariques et iliaque commune
Artère iliaque commune

Renal arteries

- Branches :
  - Inferior suprarenal arteries (1 or more),
  - For the ureter,
  - For perinephric tissue,
  - For the renal capsule,
  - The pelvis (testicular/ovarian art.),
  - Anterior and posterior divisions -> segmental arteries…

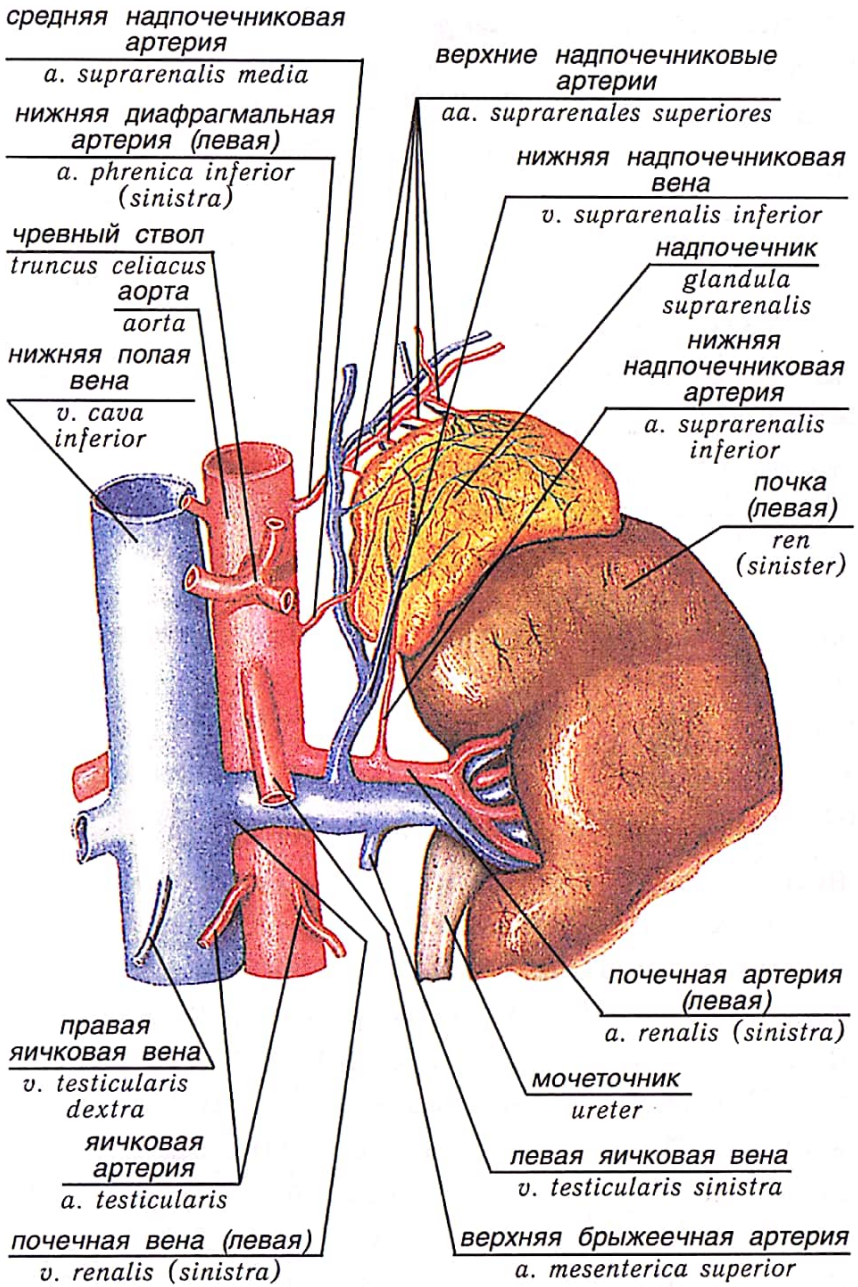
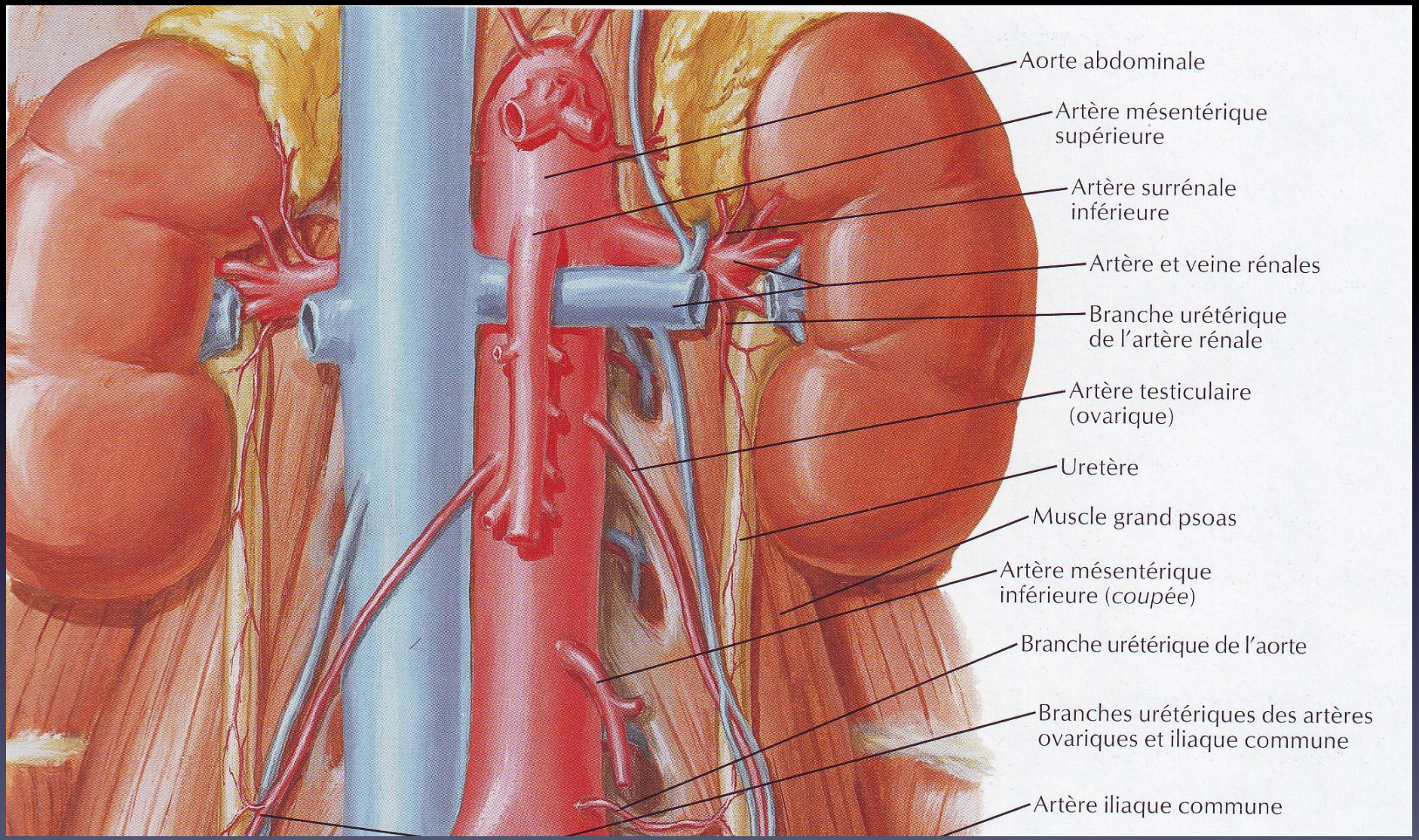


Рис. 235. Надпочечник (glandula suprarenalis), левый (вид спереди).

Renal veins

- Drain into the Inferior Vena Cava,
- Left vein crosses in front of aorta, below the superior mesenteric artery : nutcracker syndrome (hypertension of the left renal vein -> haematuria and varicocele in children),
- The left gonadal vein enters the left renal vein (bottom).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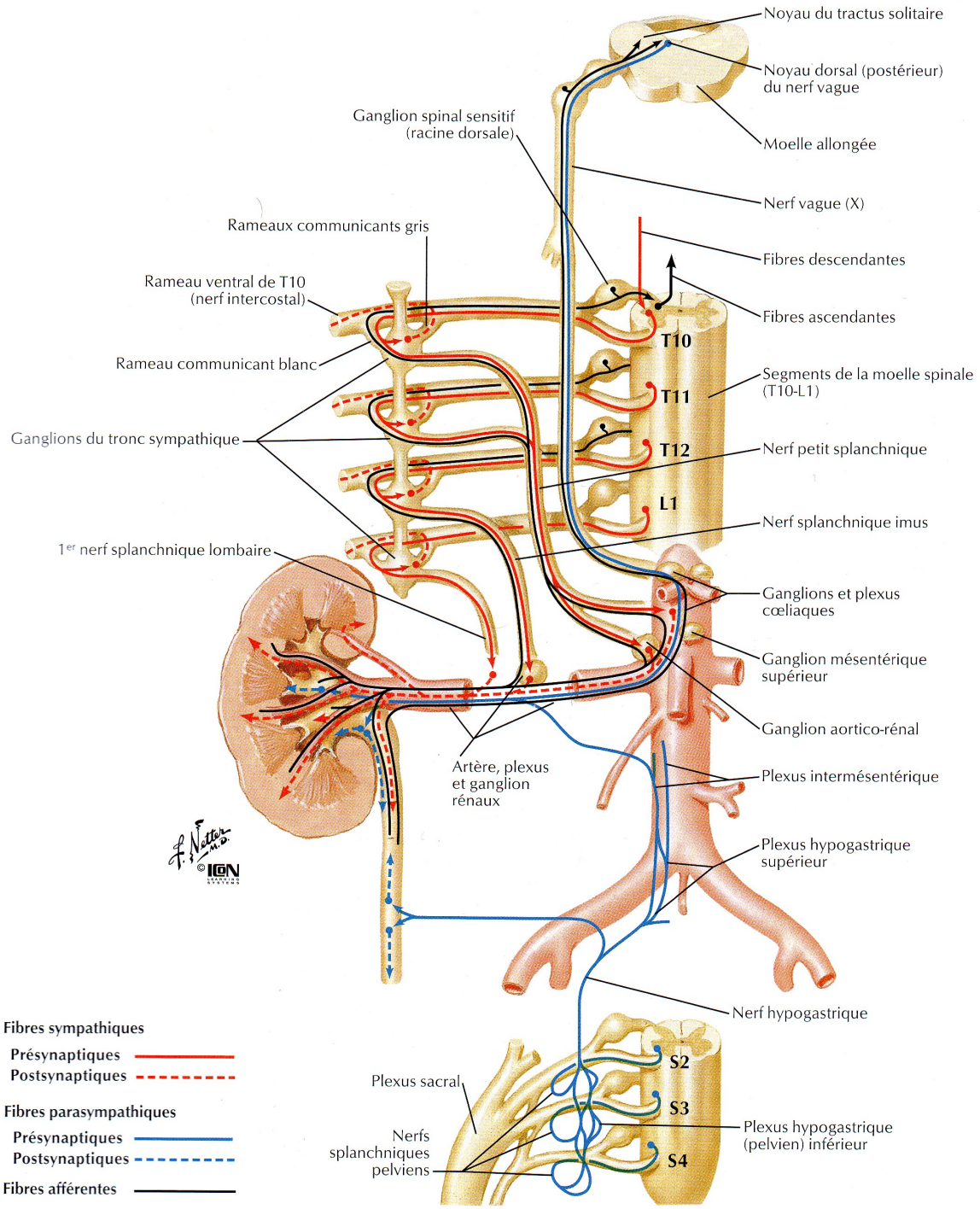
Branches urétériques des artères ovariques et iliaque commune
Artère iliaque commune

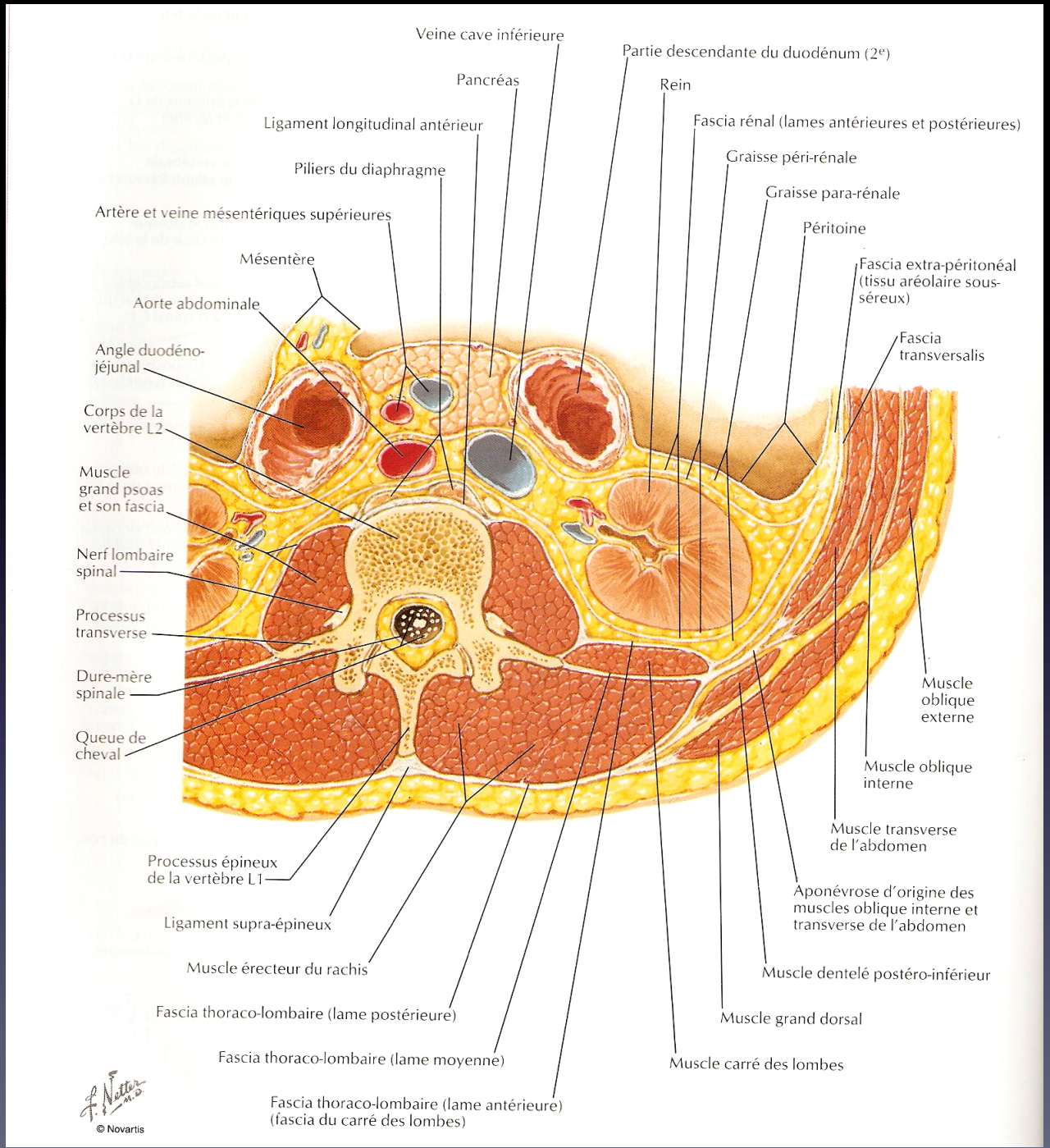
Nerve supply

- By the celiac plexus (aorticorenal ganglia) :
  - Sympathetic fibers : lesser splanchnic n., least sphlanchnic n., first branch of the lumbar splanchnic n. : T10 – L1,
  - Parasympathetic fibers : vagus nerves + hypogastric nerves (S2-S4).


Noyau du tractus solitaire
Noyau dorsal (postérieur) du nerf vague
Moelle allongée
Ganglion spinal sensitif (racine dorsale)
Nerf vague (X)
Rameaux communicants gris
Fibres descendantes
Rameau ventral de T10 (nerf intercostal)
Fibres ascendantes
T10
Rameau communicant blanc
T11
Segments de la moelle spinale (T10-L1)
Ganglions du tronc sympathique
T12
Nerf petit splanchnique
L1
Nerf splanchnique imus
1er nerf splanchnique lombaire
Ganglions et plexus cœliaques
Ganglion mésentérique supérieur
Ganglion aortico-rénal
Artère, plexus et ganglion rénaux
Plexus intermésentérique
Plexus hypogastrique supérieur
Nerf hypogastrique
S2
Plexus sacral
S3
Plexus hypogastrique (pelvien) inférieur
Nerfs splanchniques pelviens
S4
Fibres sympathiques
Présynaptiques
Postsynaptiques
Fibres parasympathiques
Présynaptiques
Postsynaptiques
Fibres afférentes

Perirenal fascia

- Envelops the kidney and surrenal gland with fat,
- Comes from fasciae of psoas and quadratus lumborum,
- Splits in a thin anterior lamina and thicker posterior lamina,
- Continues laterally as the lateroconal fascia -> fuses with posterior peritoneum,
- Fuses at the top above the suprarenal glands and attach to the crura (posterior lamina),
- No fusion medially (communication with other side),
- No fusion at the bottom


Veine cave inférieure
Partie descendante du duodénum (2e)
Pancréas
Rein
Ligament longitudinal antérieur
Fascia rénal (lames antérieures et postérieures)
Piliers du diaphragme
Graisse péri-rénale
Graisse para-rénale
Artère et veine mésentériques supérieures
Péritoine
Mésentère
Fascia extra-péritonéal (tissu aréolaire sous-séreux)
Aorte abdominale
Fascia transversalis
Angle duodéno-jéjunal
Corps de la vertèbre L2
Muscle grand psoas et son fascia
Nerf lombaire spinal
Processus transverse
Muscle oblique externe
Dure-mère spinale
Queue de cheval
Muscle oblique interne
Muscle transverse de l'abdomen
Processus épineux de la vertèbre L1
Aponévrose d'origine des muscles oblique interne et transverse de l'abdomen
Ligament supra-épineux
Muscle dentelé postéro-inférieur
Muscle érecteur du rachis
Fascia thoraco-lombaire (lame postérieure)
Muscle grand dorsal
Fascia thoraco-lombaire (lame moyenne)
Muscle carré des lombes
Fascia thoraco-lombaire (lame antérieure) (fascia du carré des lombes)
F. Netter M.D.
© Novartis

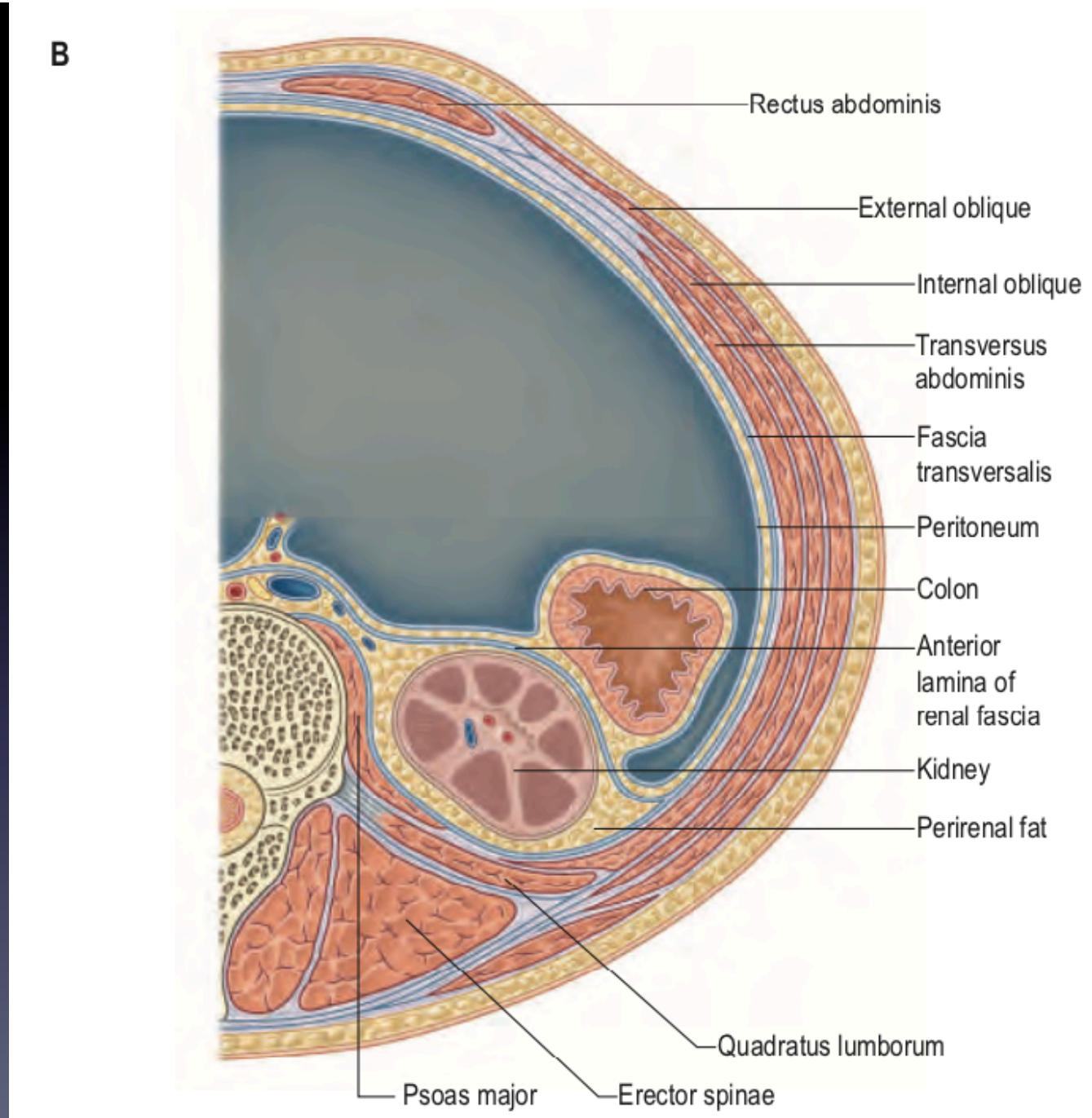
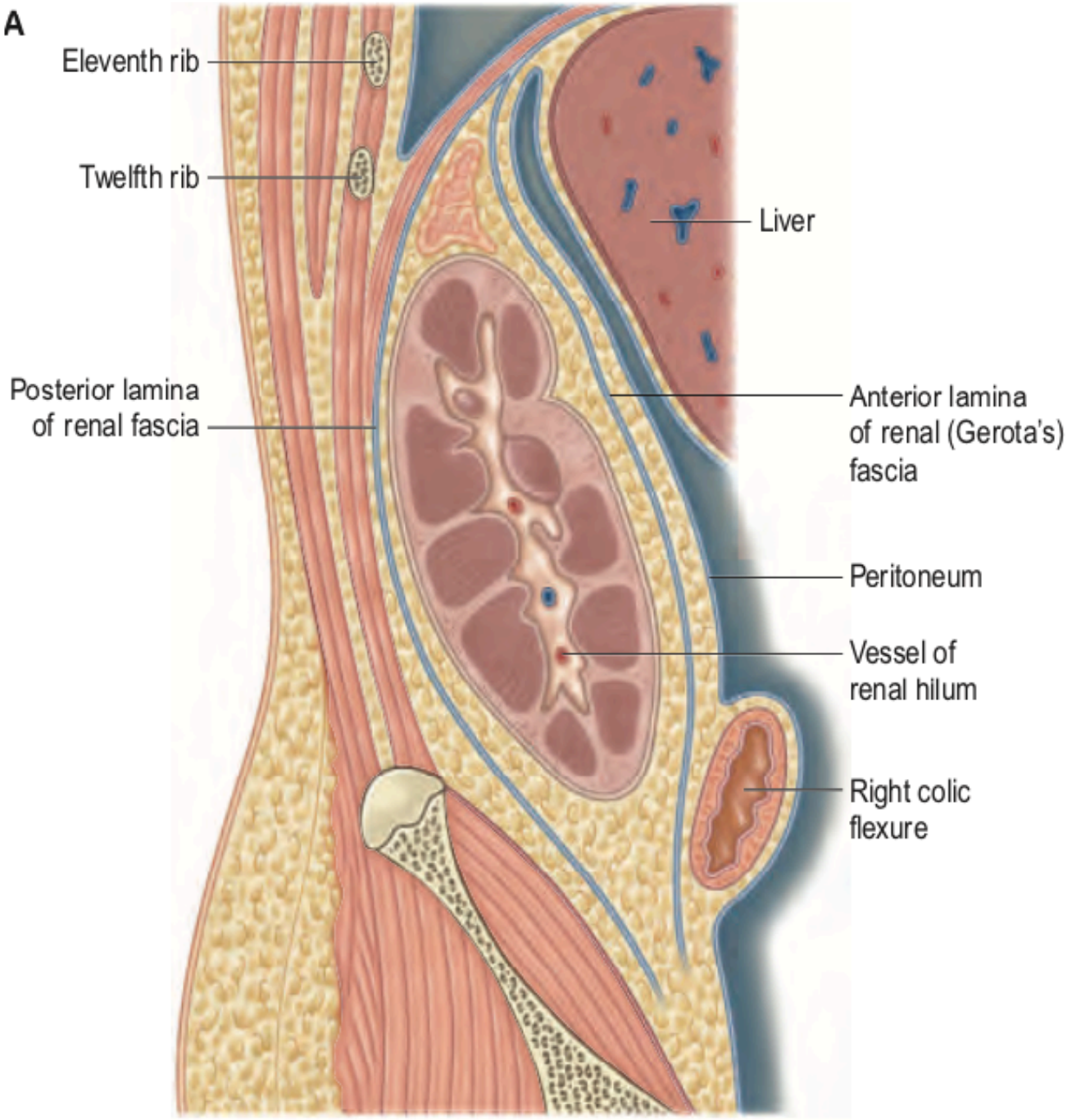


Fig. 74.4 A, A sagittal section through the posterior abdominal wall,

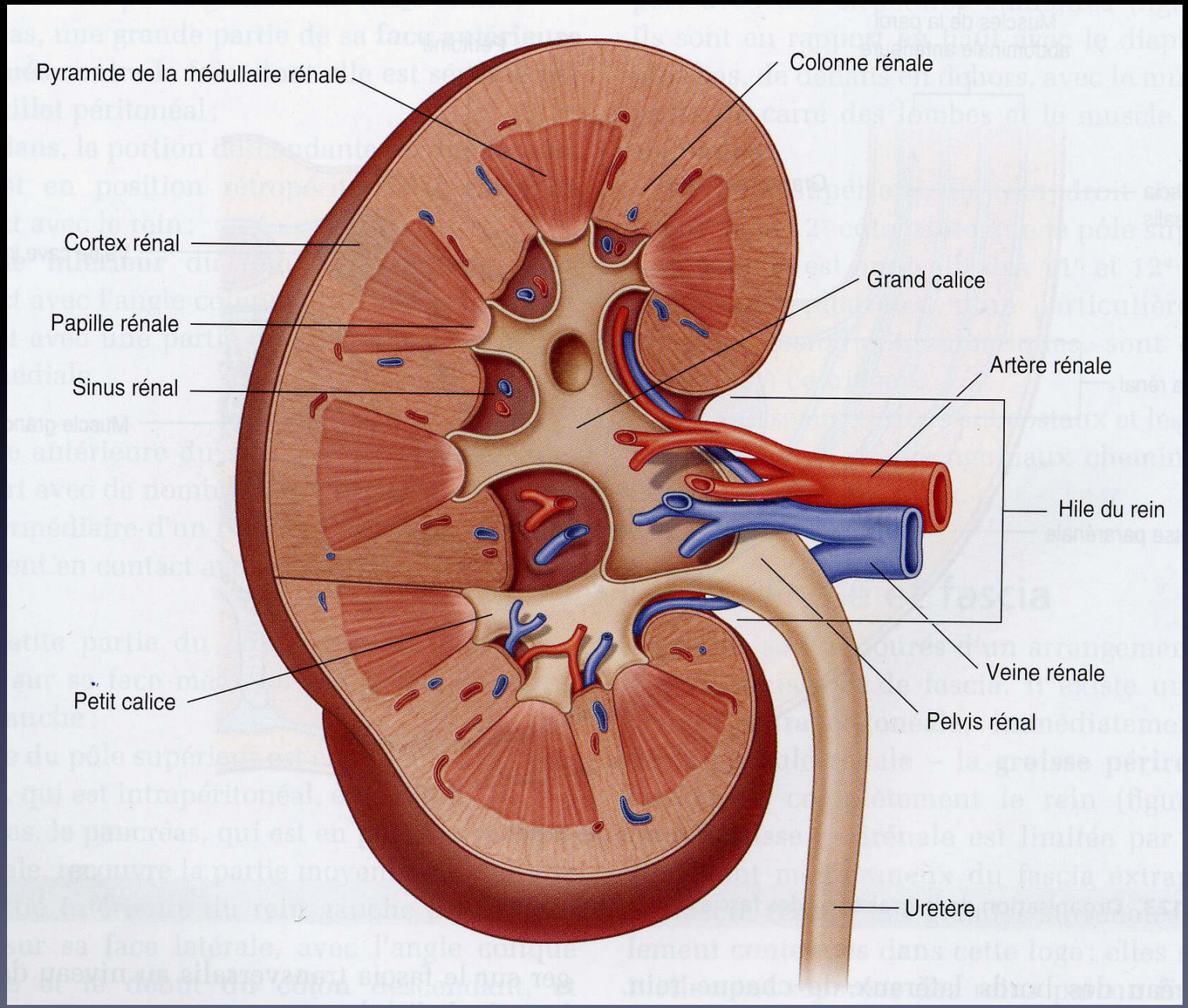
Perirenal fascia

- Communication between :
  - Kidney and the bare area of the liver on the right,
  - Kidney and diaphragm on the left (subphrenic extraperitoneal space)
  - Kidneys and the pelvis (explains ptosis)

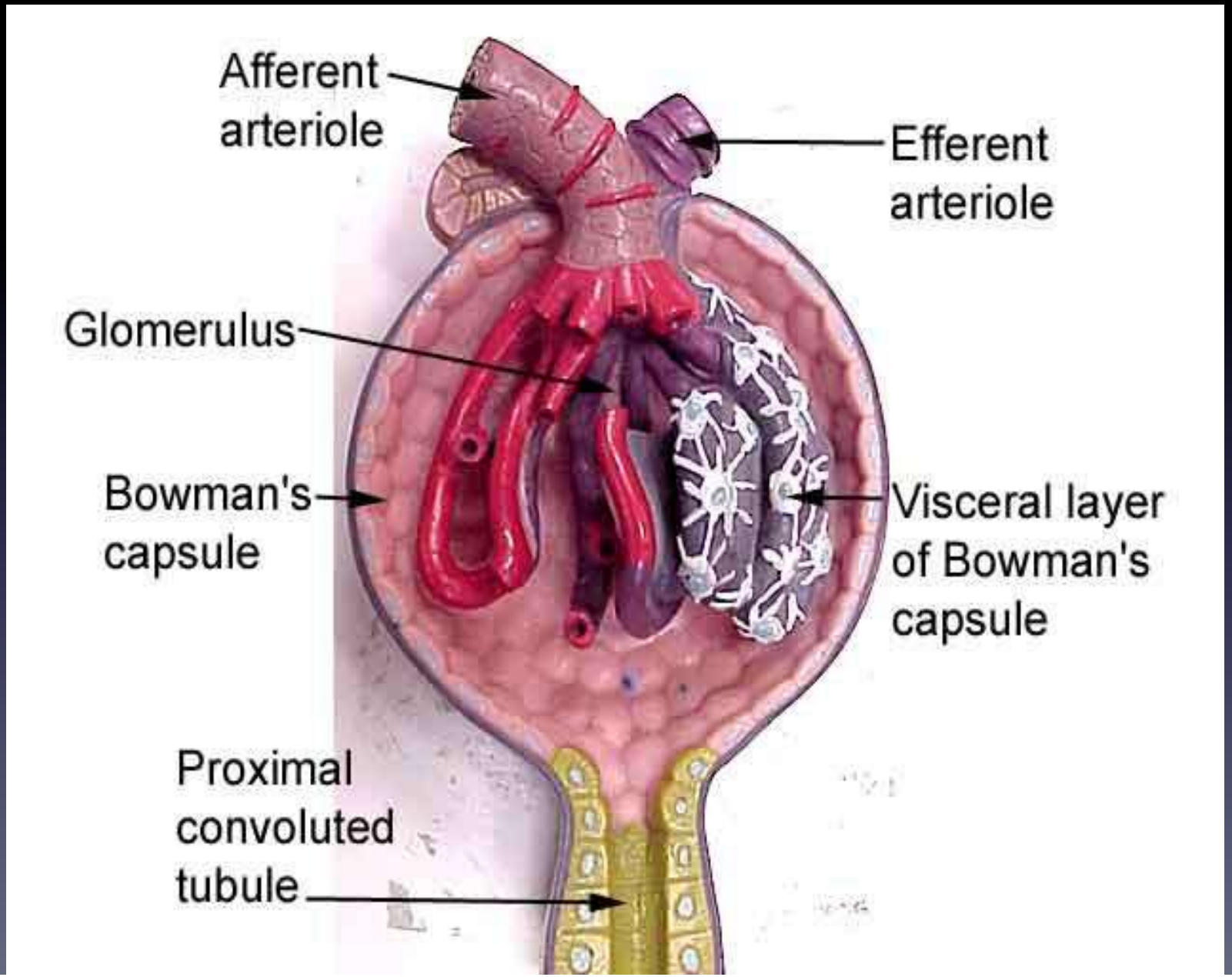

A
Eleventh rib
Twelfth rib
Liver
Posterior lamina of renal fascia
Anterior lamina of renal (Gerota's) fascia
Peritoneum
Vessel of renal hilum
Right colic flexure

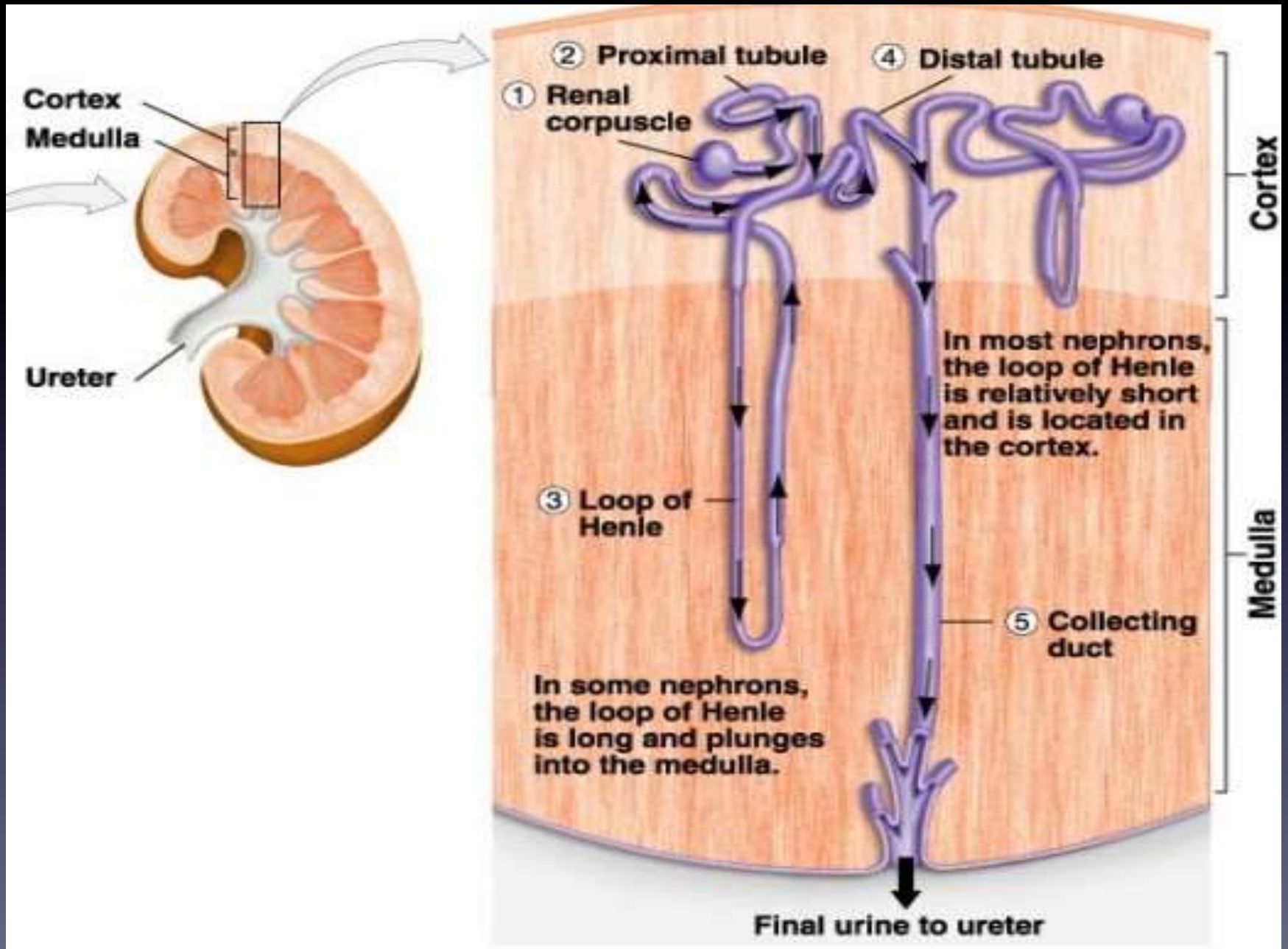
Histology

- From outside to inside :
  - ***Capsule :*** rigid, protection of the kidney,
  - ***Cortex :*** contains the glomeruli and the convoluted tubules (prox. And distal),
  - ***Medulla :*** Contains loops of Henle, collecting ducts and pyramids,
  - *Renal pelvis* : Contains hilum and calyxes.


Pyramide de la médullaire rénale
Colonne rénale
Cortex rénal
Grand calice
Papille rénale
Artère rénale
Sinus rénal
Hile du rein
Veine rénale
Petit calice
Pelvis rénal
Uretère

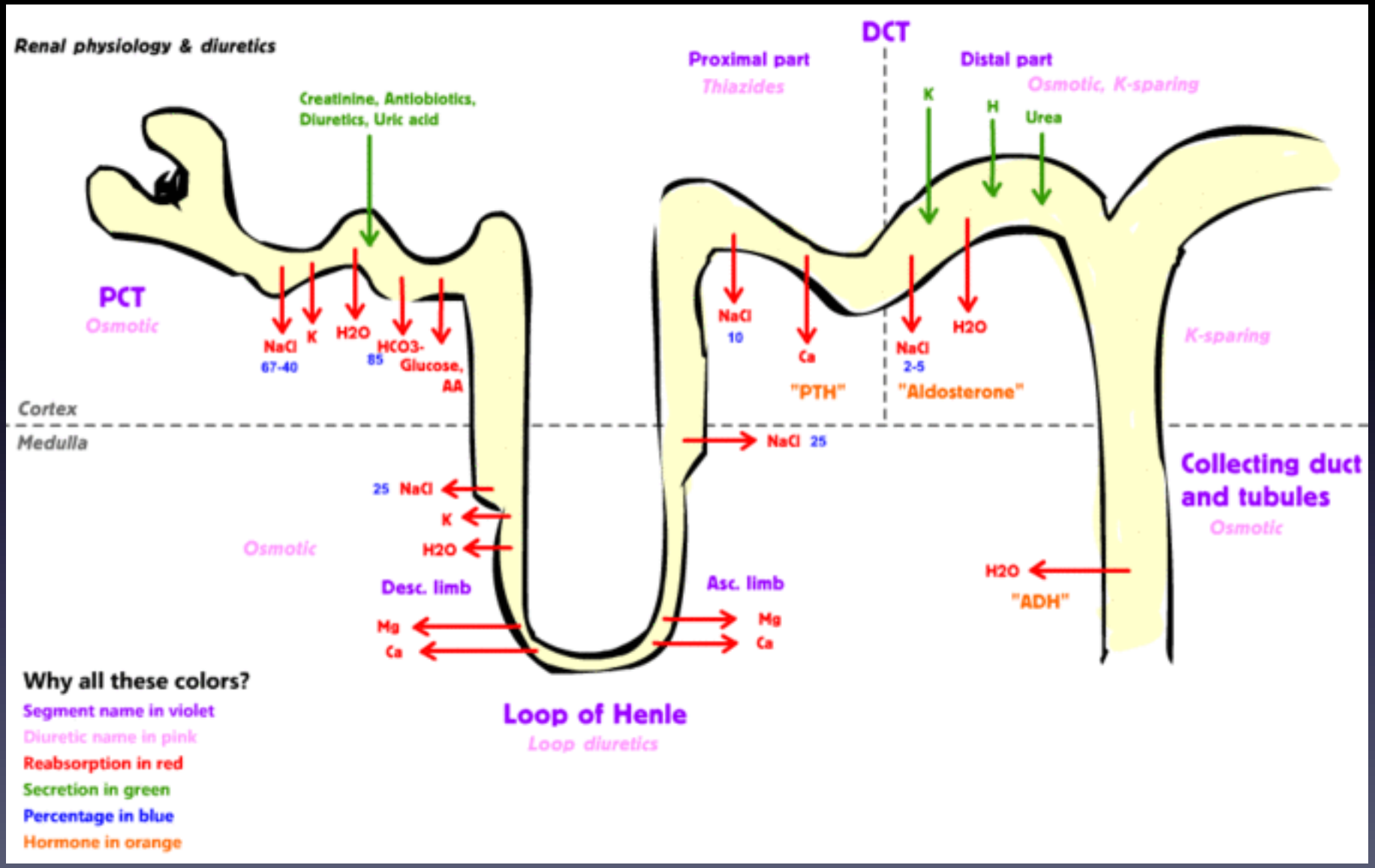
Glomerulus


Afferent arteriole
Efferent arteriole
Glomerulus
Bowman's capsule
Visceral layer of Bowman's capsule
Proximal convoluted tubule


Cortex
Medulla
Ureter
2 Proximal tubule
4 Distal tubule
1 Renal corpuscle
Cortex
In most nephrons, the loop of Henle is relatively short and is located in the cortex.
3 Loop of Henle
5 Collecting duct
Medulla
In some nephrons, the loop of Henle is long and plunges into the medulla.
Final urine to ureter

Renal Physiology

- **Filtration :**
  - blood entering kidney will be filtered,
  - Filterable components enter the glomerulus (water, trace elements…), non filterable components exit by efferent arteriole (cells, albumin…).
- **Reabsorption :**
  - Molecules and ions are reabsorbed by osmolarity through the nephron in the circulatory system.
- **Secretion :**
  - Some toxics and substances will be removed from the blood (hydrogen, creatinine, drugs…) to the collecting duct -> urine.


Renal physiology & diuretics
DCT
Proximal part
Thiazides
Distal part
Osmotic, K-sparing
Creatinine, Antiobiotics,
Diuretics, Uric acid
K
H
Urea
PCT
Osmotic
NaCl
67-40
K
H2O
HCO3-
85
Glucose,
AA
NaCl
10
Ca
"PTH"
NaCl
2-5
"Aldosterone"
H2O
K-sparing
Cortex
Medulla
NaCl 25
Collecting duct
and tubules
Osmotic
25 NaCl
K
H2O
Osmotic
Desc. limb
Asc. limb
Mg
Ca
Mg
Ca
H2O
"ADH"
Why all these colors?
Segment name in violet
Diuretic name in pink
Reabsorption in red
Secretion in green
Percentage in blue
Hormone in orange
Loop of Henle
Loop diuretics

Renal Physiology

- **Other functions :**
- Hormones :
  - Erythropoietin : production of blood cells,
  - Calcitriol : permits calcium absorption (intestine) and phosphate reabsorption (kidney),
  - Renin : regulates angiotensin and aldosterone levels.
- Acid-base regulation (with lungs)
- Neoglucogenesis (cortex) : from lactate, glycerol and glutamine.

Pathology

- **Cysts** : multicystic disease, displasia…
- **Glomerular diseases** : glomerulonephritis, IgA nephropathy (Berger)…
- **Infections** : pyelonephritis…
- **Neoplasia** (cancer) : carcinoma, cystic nephroma…
- **Others** : congenital abnormalities, acute tubular necrosis, renal infarct…

- Medical Tests :
  - Urinalysis,
  - Echography,
  - XRay : stones (only calcium),
  - Intravenous urography,
  - Doppler ultrasound (renal arteries, stenosis),
  - Arteriography (renal arteries),
  - Scanner, MRI,
  - Scintigraphy.

Osteopathy

- Renal dysfunctions :
  - Ptosis : 4 degrees,
  - Renal block.

1st degree ptosis

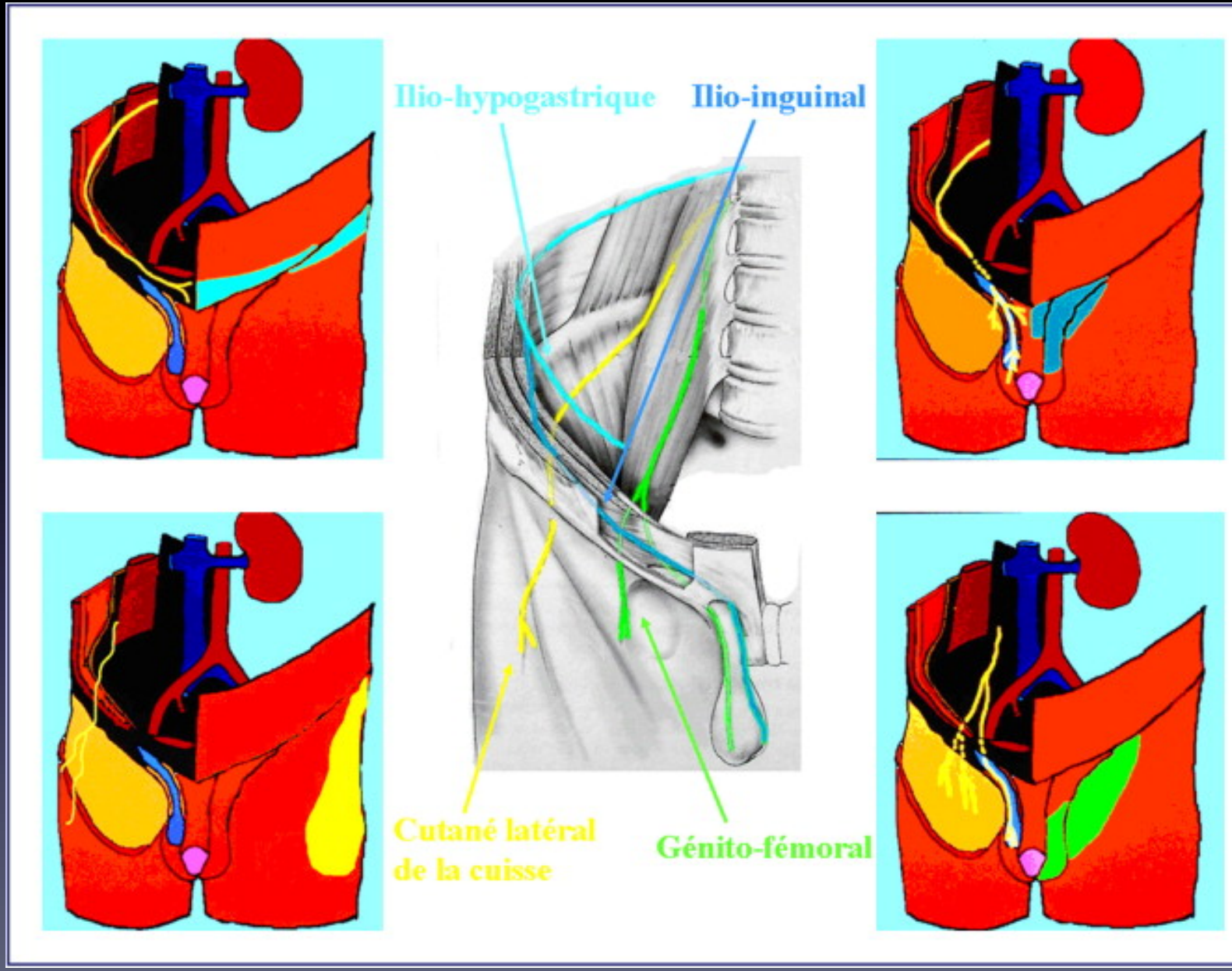
- *Etiologies :*
  - Fast loss of weight,
  - Adhesions,
  - Trauma,
  - Abdominal hypotony,
  - Delivery,
  - Dehydratation (kidney volume decreases),
  - Chronical cough,
  - Constitution (asthenic posture).

1st degree ptosis

- *Symptoms* :
  - Irritation of the subcostal nerve : pain following K12,
  - Often the dysfunction which gives the most symptoms, and the most seen.
- *Differential diagnosis* : thoracic shingles, lower pulmonary infections.

2nd degree ptosis

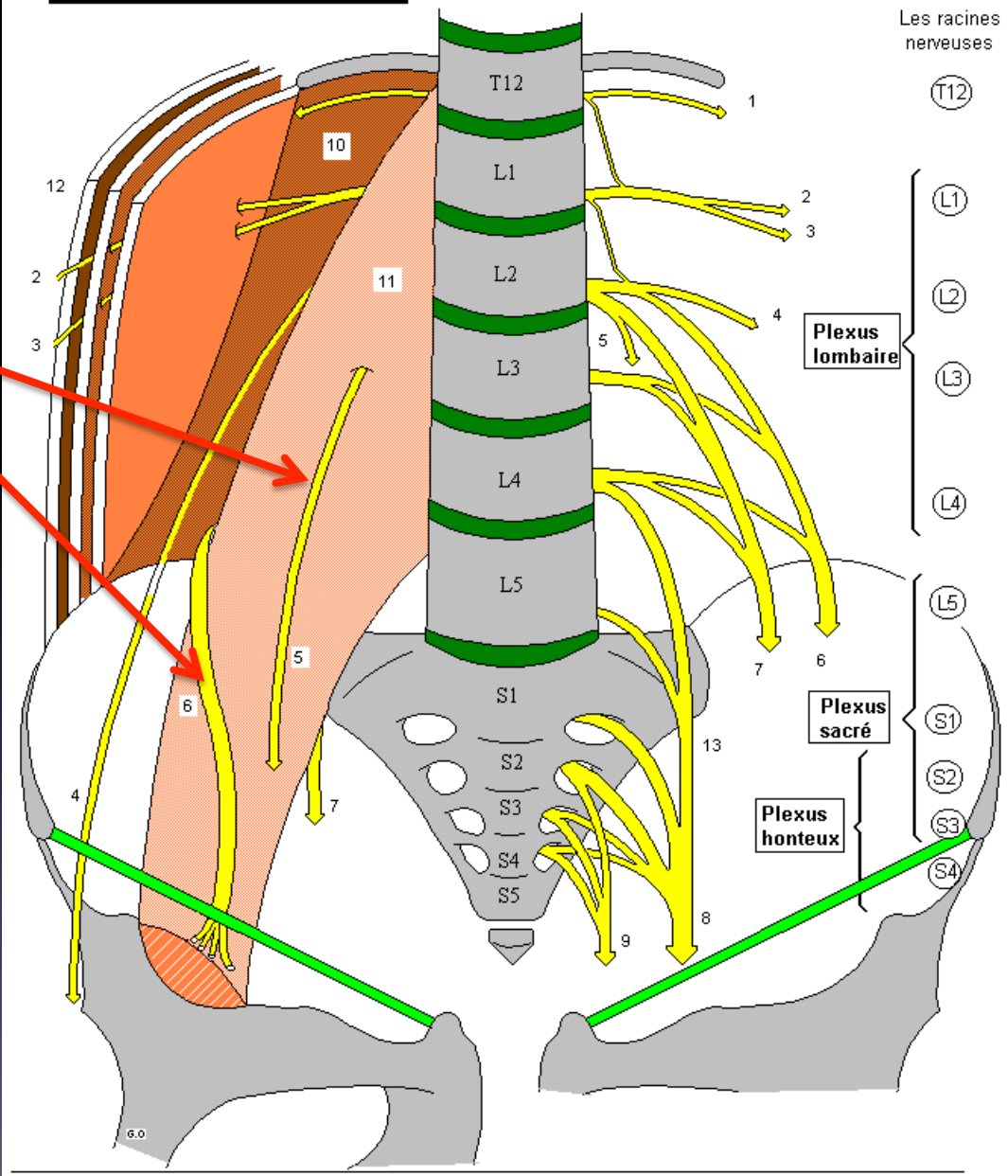
- Same etiologies, the kidney goes down and external rotation (psoas),
- *Symptoms* :
  - Irritation of the ilioinguinal and iliohypogastric nerves : L1 root.
  - Possible irritation of the lateral cutaneous nerve of thigh : L2 (external face of the thigh).
- *Differential diagnosis :* Inguinal hernia, renal colic, pyelonephritis, appendicitis, pudendal neuralgia, sigmoiditis, testis cancer.


Ilio-hypogastrique
Ilio-inguinal
Cutané latéral
de la cuisse
Génito-fémoral

3rd degree ptosis

- Same etiologies, kidney goes lower in internal rotation, the renal pedicle holds it.
- *Symptoms* :
  - Cruralgia (with its accessory nerve = internal face of the knee),
  - Possible irritation of the genitocrural nerve (L2 : labia majora, scrotum, scarpa triangle),
- *Differential diagnosis* : gonarthrosis.

Les plexus lombaire, sacré et honteux



1- 12ème n. intercostal
2- n. ilio-hypogastrique
3- n. ilio-inguinal
4- n. cutané lat. de la cuisse
5- n. génito-fémoral
6- n. fémoral
7- n. obturateur
8- n. ischiatique
9- n. honteux interne
10- m. carré des lombes
11- m. grand psoas
12- muscles larges de l'abdomen
13- Tronc lombo-sacré

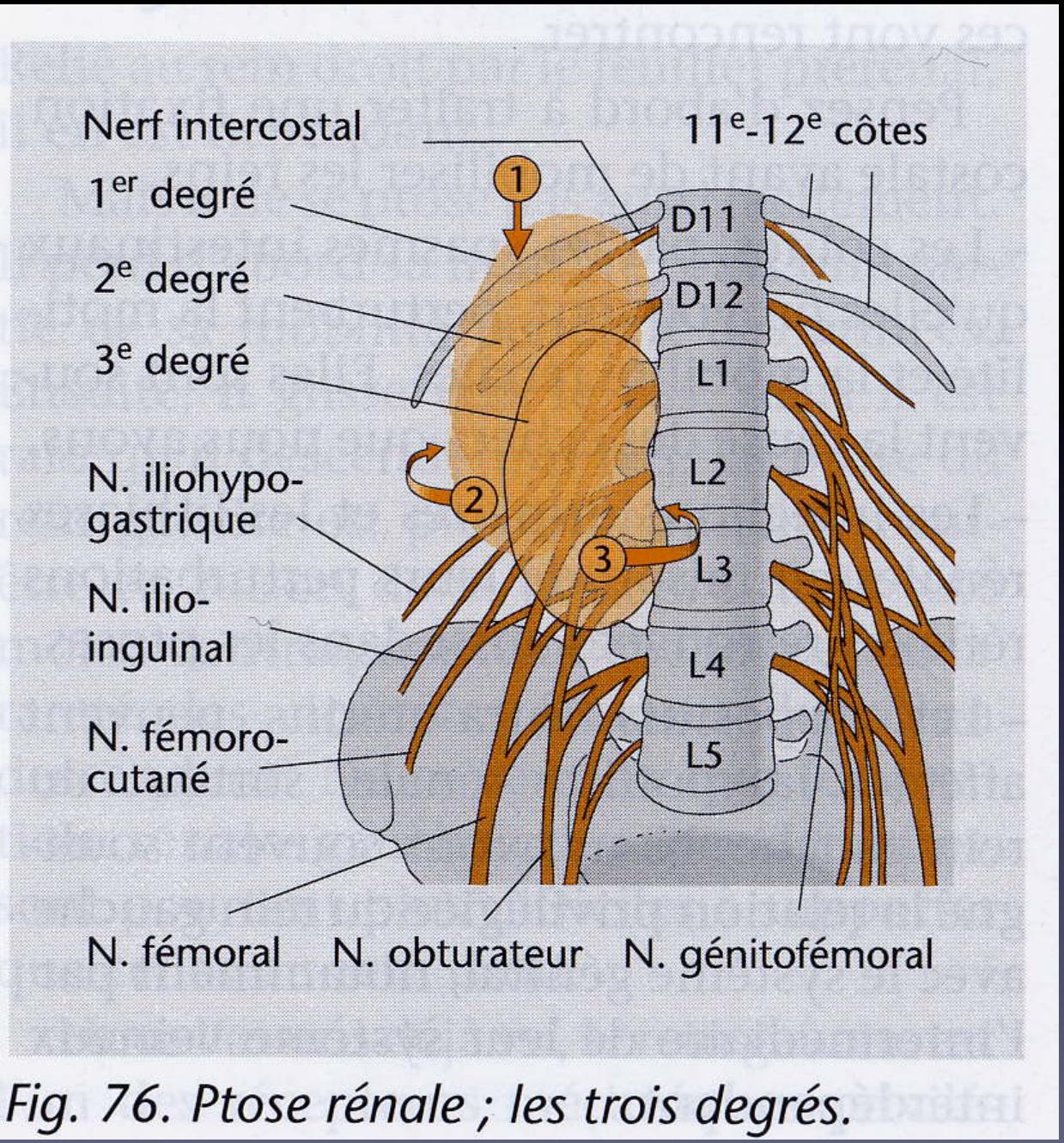


Fig. 76. Ptose rénale ; les trois degrés.

4th degree ptosis

- Same etiologies, kidneys goes lower and out of the psoas rail and becomes pelvic. Visualized on Xray.
- Makes an angle on the ureter (free on its superior 1/3) : increases risk of lithiasis.
- *Symptoms* :
  - None.


SUPINE
10 MIN


RT
UPRT
10 MIN

Renal block

- More frequent on the left (duodenal junction),
- Etiologies :
  - Intrinsic (renal pathologies),
  - Inflammation of a nearby organ (spleen, colon, lower pleura)…
- *Symptoms* :
  - Usually no symptom.
  - Signs of toxicity (fatigue, headache, stiffness, pain in joints, asthenia, oliguria…).

Practice

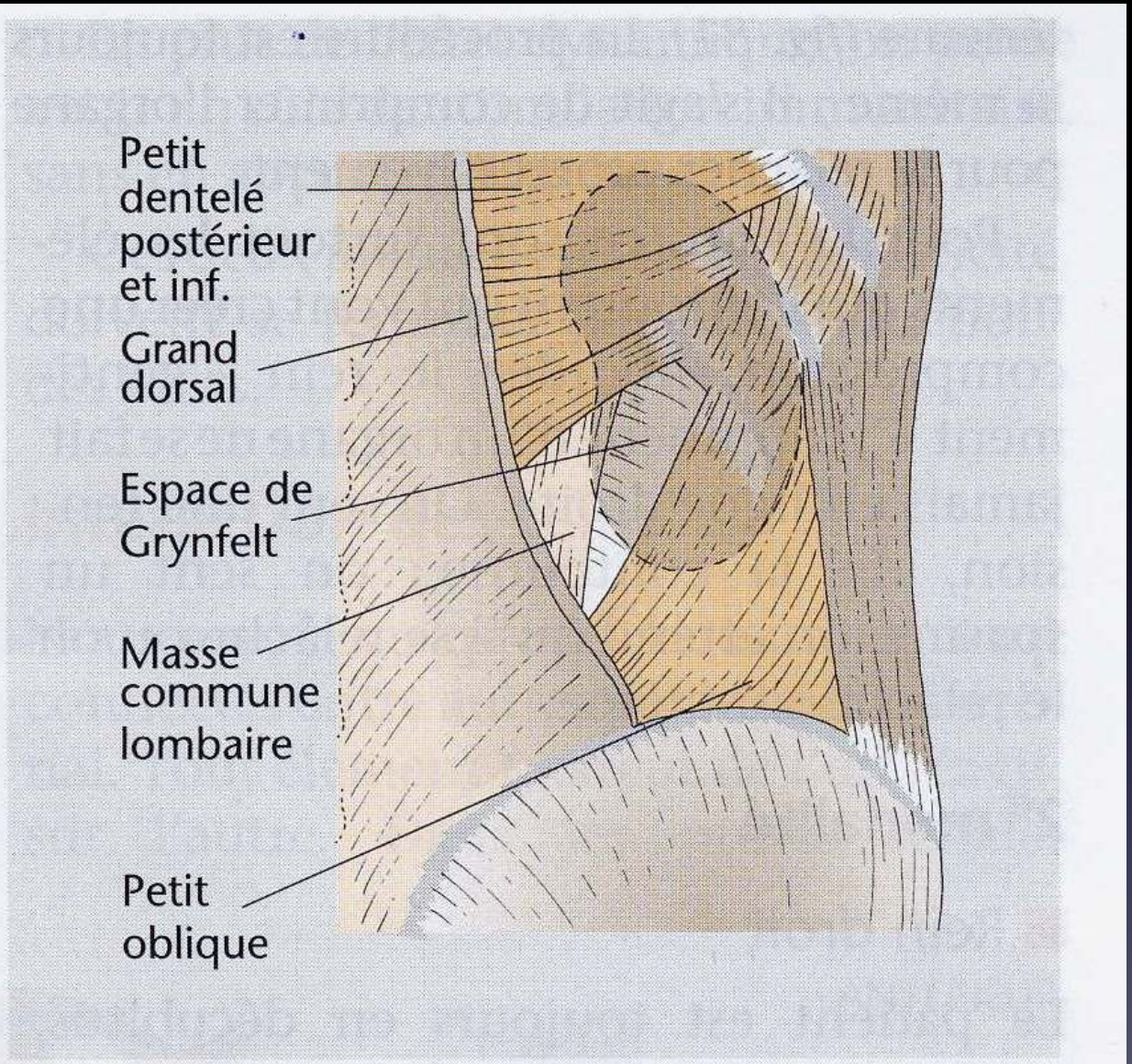


Fig. 80. Espace de Grynfelt (d'après Oberlin).

Red flags Tests

- Renal shaking
- Posterior palpation : Grynfelt square
- Anterior palpation

Pain = Emergency !

Renal tests

- Anterior palpation of the kidney

Renal tests

- Position from the patient's head

Renal tests

- Kidney mobility

Corrections - informations

- Only one kidney per seance (tireness, toxicity…)
- Better begin with bladder and ureters before kidney
- Hydratation+++ the next two days

- Side-effects :
- Tireness, headache, stiffness, polyuria (one or 2 days), lumbar pain, blood in urine.

Corrections

- 1st degree ptosis

Corrections

- 2nd degree ptosis

  1 – Correction of External rotation

  2 – Lift the kidney

Corrections

- 3rd degree ptosis
  - 1 – Correction of the internal rotation
  - 2 – Lift the kidney

Corrections

- 4th degree :

Floating kidney ? Or congenital pelvic kidney ?

Treat if symptoms (stones)

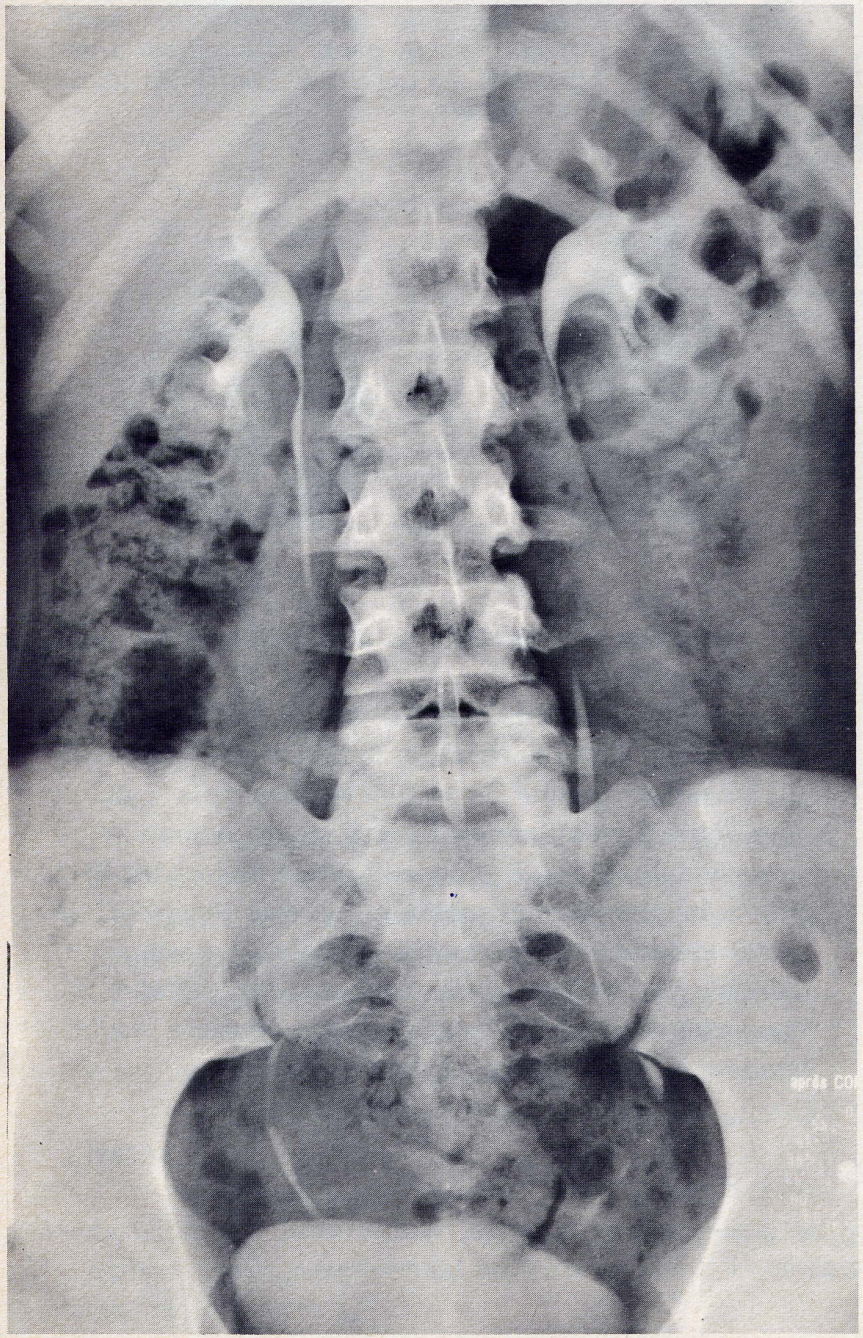
1 – Bring back on the psoas

2 – Same as 3rd degree

Corrections

- Correction of a renal block

Ureters



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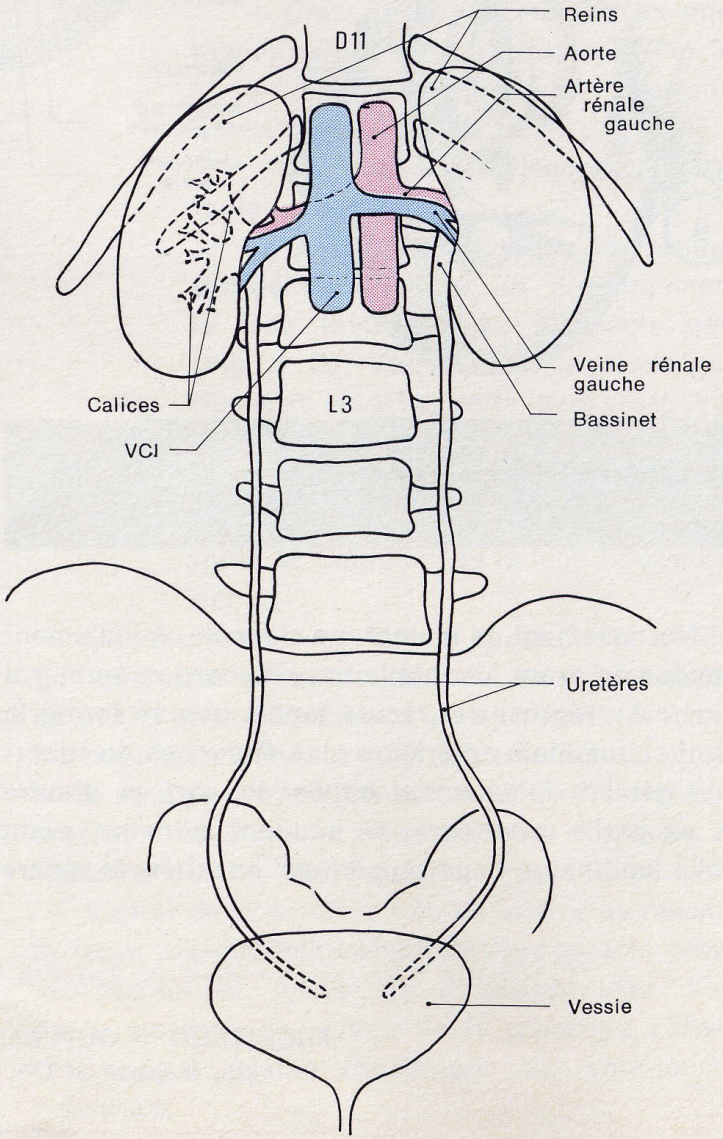


Anatomy

- Vertical tubes, parallel to the IVC,
- Start around L2
- About 20-25 cm long,
- Diameter : 4 - 5 mm.

- Layers :
  -
  - Muscular layer (internal part = longitudinal fibers, external = circular fibers),
  - Mucosa.
- Muscular layer = peristaltism,
- The peristaltism has periodic waves (1 to 4 per min),
- Retroperitoneal, 2 portions :
  - Lumbar = vertical along the psoas,
  - Pelvic = curved, more horizontal, below the peritoneum.

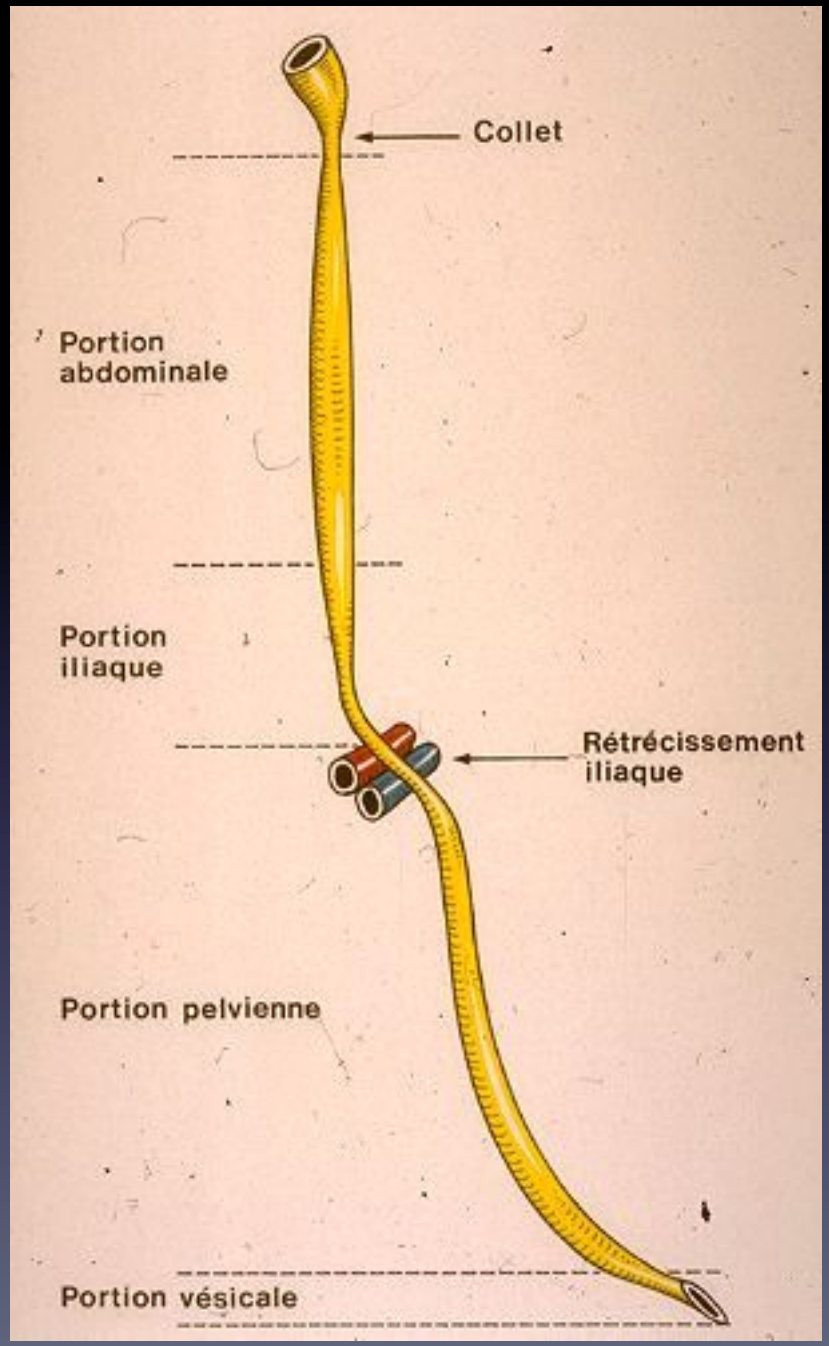
Localization

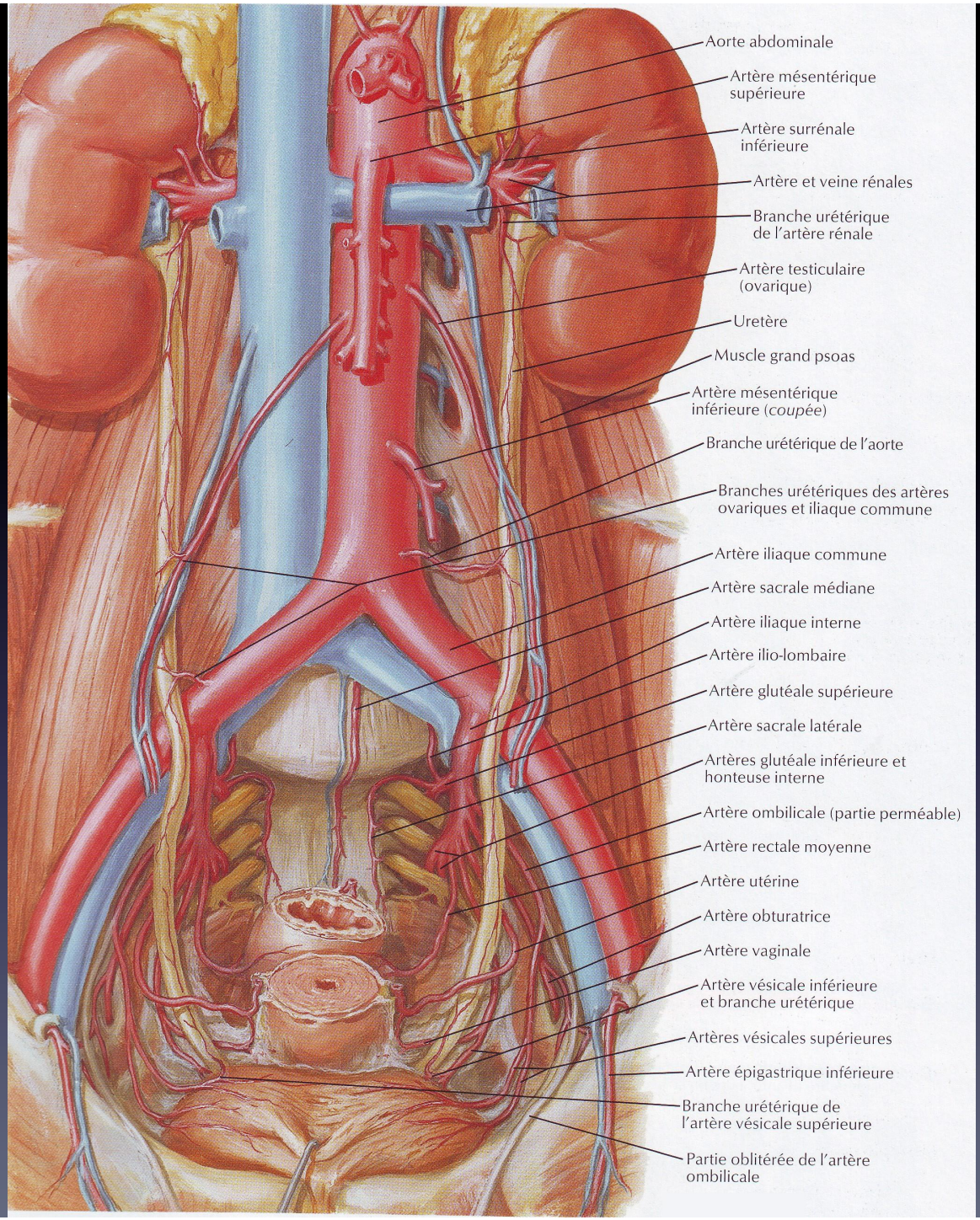
- Palpation is very very difficult !!

- They follow the external edge of the rectus abdominis (anterior), and the external edge of the transverse processes (posterior),

Narrowings

- Along the tube : 3 narrowings :
  - **Superior :** junction with the renal pelvis,
  - **Inferior :** at the crossing with the primary iliac vessels (anterior superior iliac spine / inferior edge of the sacroiliac joint.
  - **Caudal** : vesicoureteral junction : just before the connection with the bladder.


Collet
Portion abdominale
Portion iliaque
Rétrécissement iliaque
Portion pelvienne
Portion vésicale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Muscle grand psoas
Artère mésentérique inférieure (*coupée*)
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Branches urétériques des artères ovariques et iliaque commune
Artère iliaque commune
Artère sacrale médiane
Artère iliaque interne
Artère ilio-lombaire
Artère glutéale supérieure
Artère sacrale latérale
Artères glutéale inférieure et honteuse interne
Artère ombilicale (partie perméable)
Artère rectale moyenne
Artère utérine
Artère obturatrice
Artère vaginale
Artère vésicale inférieure et branche urétérique
Artères vésicales supérieures
Artère épigastrique inférieure
Branche urétérique de l'artère vésicale supérieure
Partie oblitérée de l'artère ombilicale

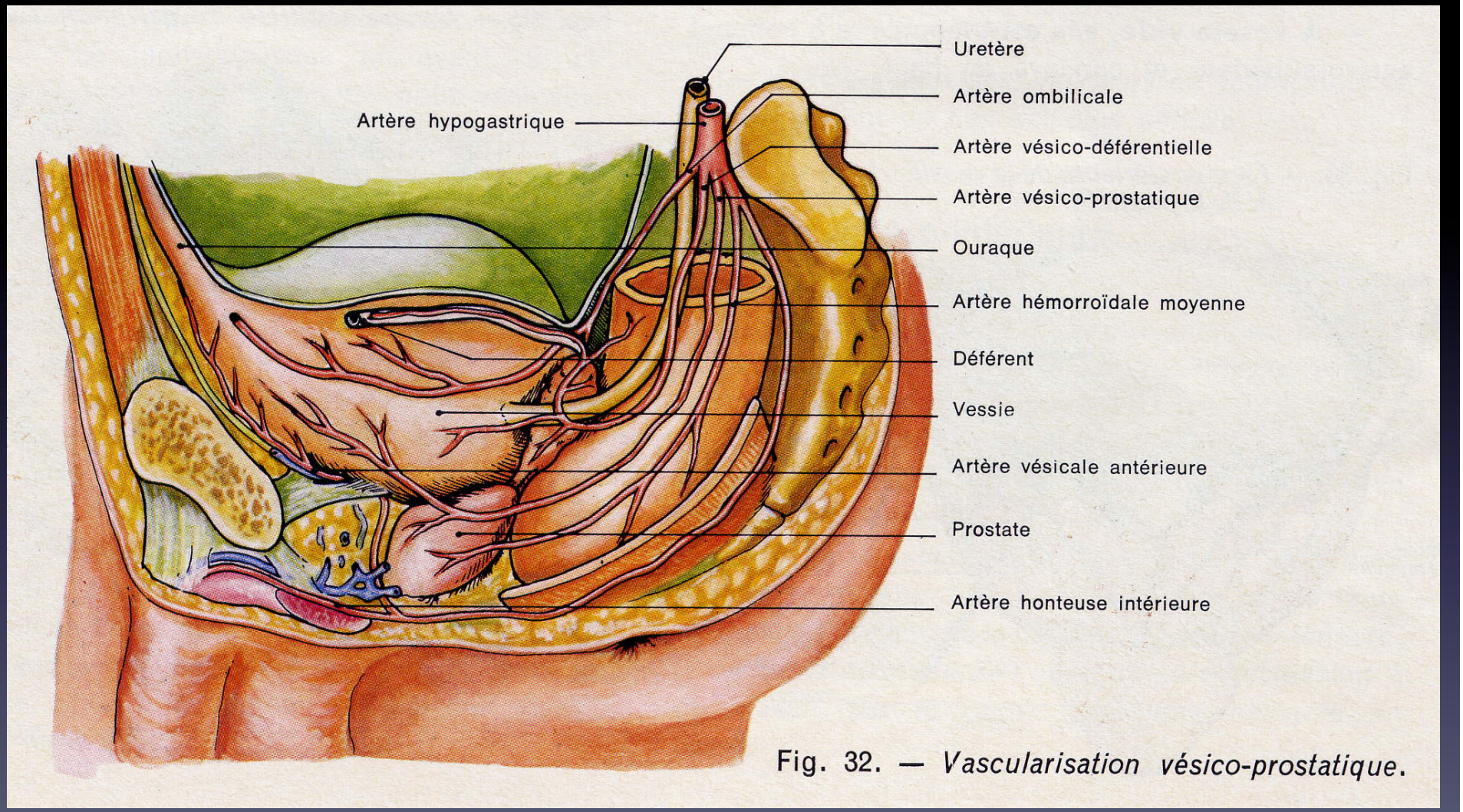


Fig. 32. — *Vascularisation vésico-prostatique.*

Attachments

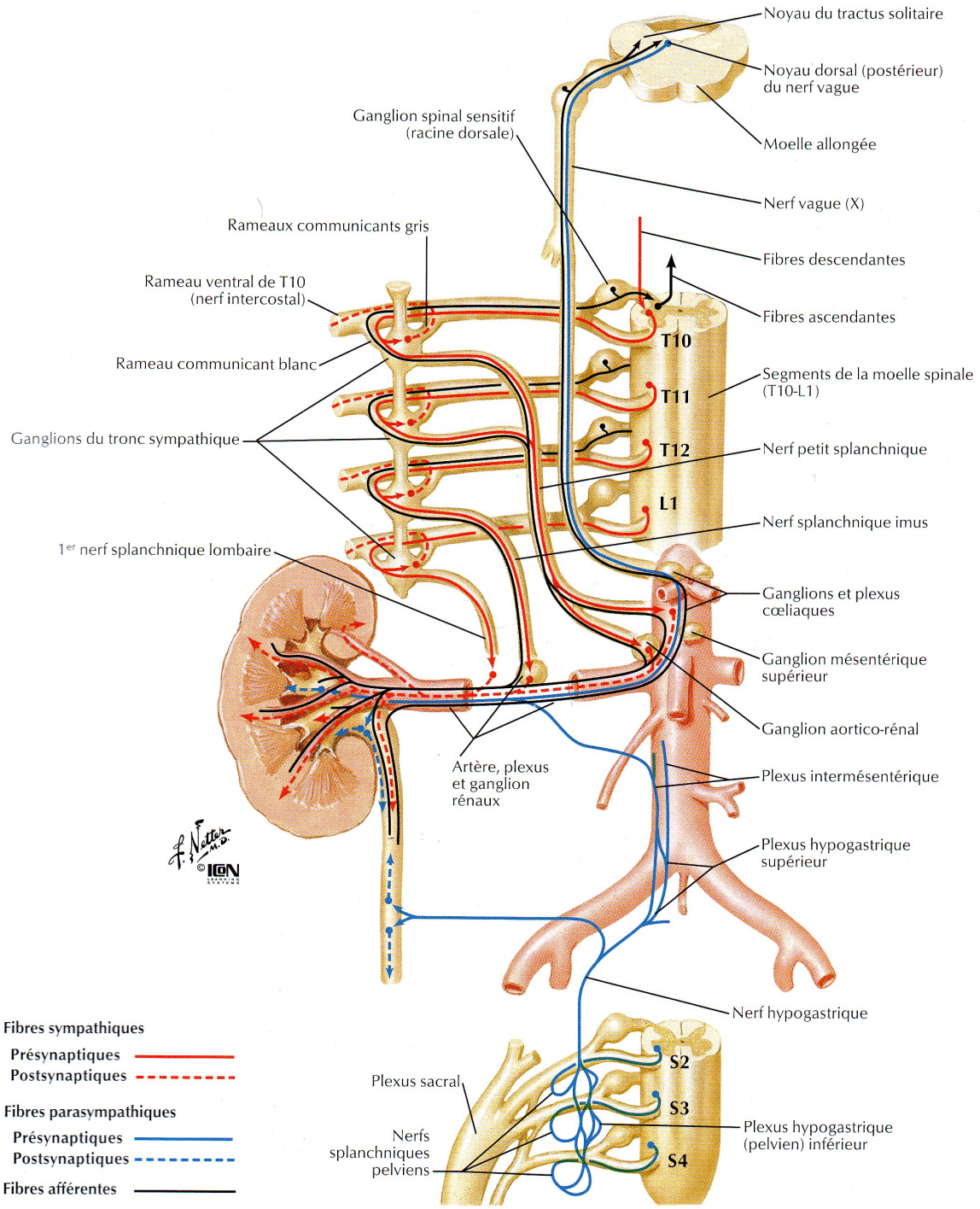
- The ureters are very mobile, especially on the superior 1/3,
- Fixed to the kidney at the top, and only by the posterior peritoneum in the abdomen.
- Then it passes in the pelvirectal space (parametrium) and finishes at the posterior part of the trigone.

Blood supply

- *Arteries* :
- Lumbar part : superior ureteral art. (renal art.),
- Pelvic part : inferior ureteral art. (internal iliac art.)
- *Veins* :
- Same. Drain in the gonadal veins.

Nerve supply

- Same as the kidneys :
- By the celiac plexus (aorticorenal ganglia) :
  - Sympathetic fibers : lesser splanchnic n., least sphlanchnic n., first branch of the lumbar splanchnic n. : T10 – L1,
  - Parasympathetic fibers : vagus nerves + hypogastric nerves (S2-S4).


Noyau du tractus solitaire
Noyau dorsal (postérieur) du nerf vague
Moelle allongée
Ganglion spinal sensitif (racine dorsale)
Nerf vague (X)
Rameaux communicants gris
Fibres descendantes
Rameau ventral de T10 (nerf intercostal)
Fibres ascendantes
T10
Rameau communicant blanc
T11
Segments de la moelle spinale (T10-L1)
Ganglions du tronc sympathique
T12
Nerf petit splanchnique
L1
Nerf splanchnique imus
1er nerf splanchnique lombaire
Ganglions et plexus cœliaques
Ganglion mésentérique supérieur
Ganglion aortico-rénal
Artère, plexus et ganglion rénaux
Plexus intermésentérique
Plexus hypogastrique supérieur
Nerf hypogastrique
S2
Plexus sacral
S3
Plexus hypogastrique (pelvien) inférieur
Nerfs splanchniques pelviens
S4
Fibres sympathiques
Présynaptiques
Postsynaptiques
Fibres parasympathiques
Présynaptiques
Postsynaptiques
Fibres afférentes

Pathology

- Cancers, stenosis, ureteroceles, megaureters…
- Lithiasis : The most common :
  - Calcium oxalate : radiopaque, most common,
  - Hydroxyapatite (calcium phosphate) : radiopaque, common,
  - Brushite, radiopaque, rare,
  - Uric acid : radiolucent,
  - Struvite : radiopaque,
  - Cystine : mildly radiopaque, rare.

Uric acide

Calcium

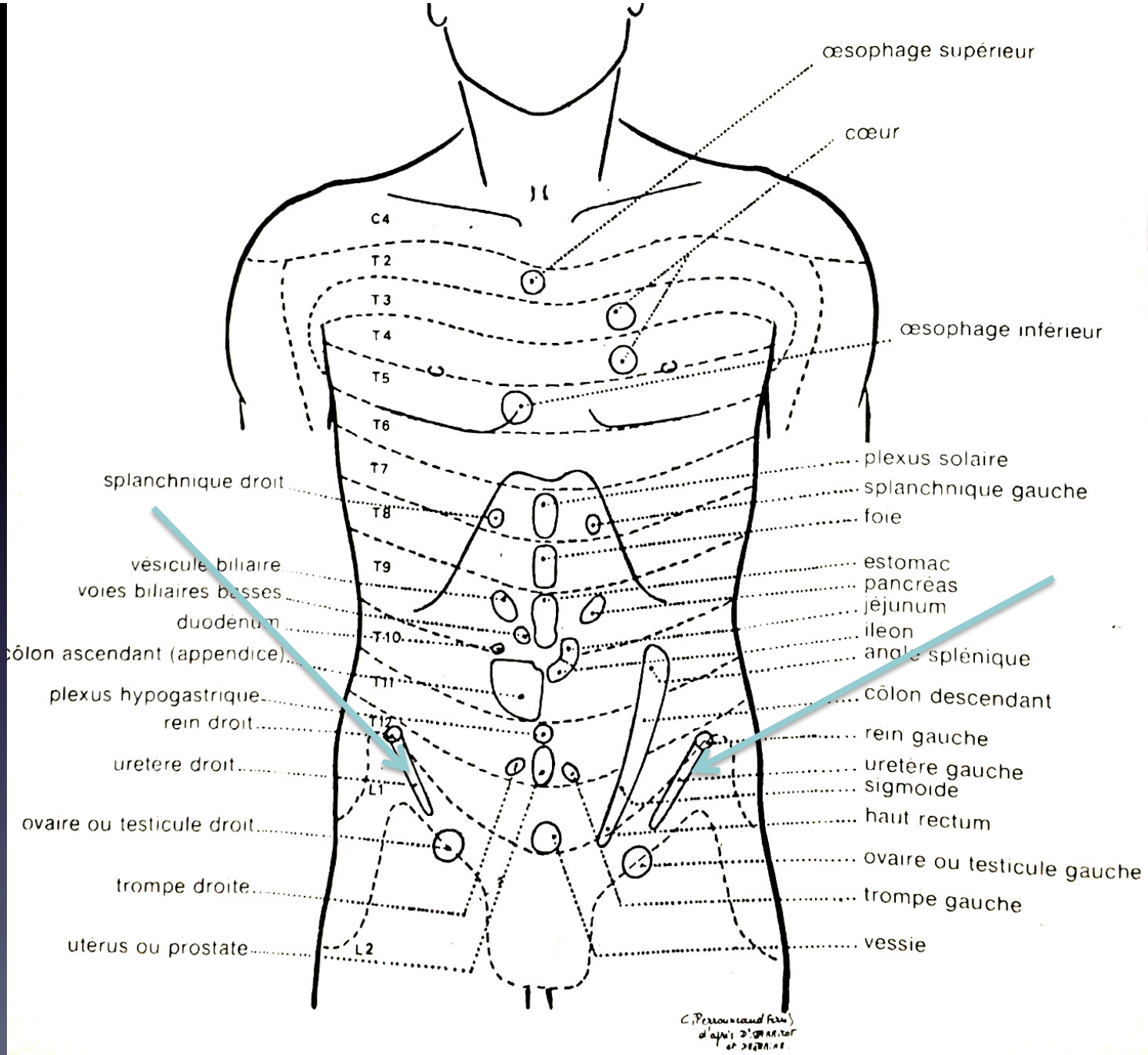
Osteopathy

- Search for spasms.
- No palpation in physiology.
- Differential diagnosis :
  - **Left :** Sigmoid colon : Secondary root of the mesosigmoid.
  - **Right :** Pain on the ileocecal junction, appendicitis.
  - **Both sides :** Ovaries (cysts, torsion, cancer…) in the iliac fossa.

Practice

Technique on ureters

- Contraindication : renal colic (?)
- Indications :
  - After-effects of renal colic,
  - Residual pain,
  - Kidney stones background (acidosis, gout),
  - Before treating kidneys.

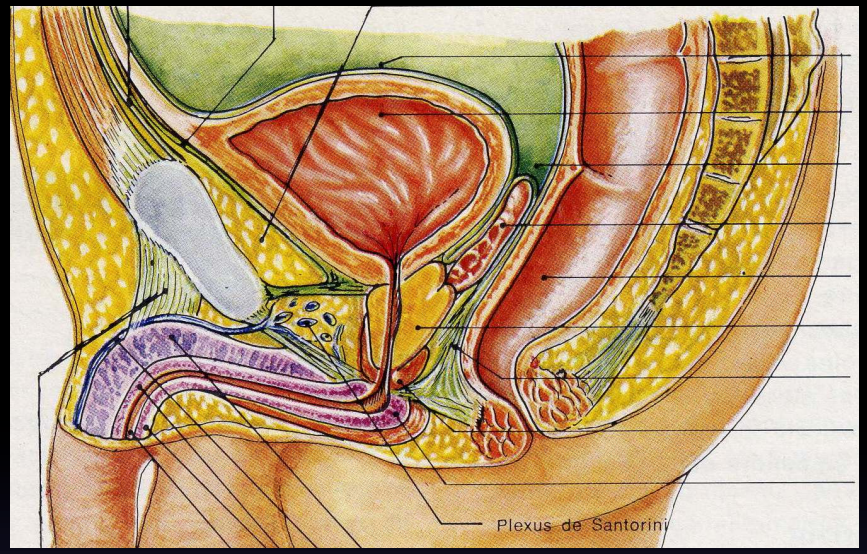


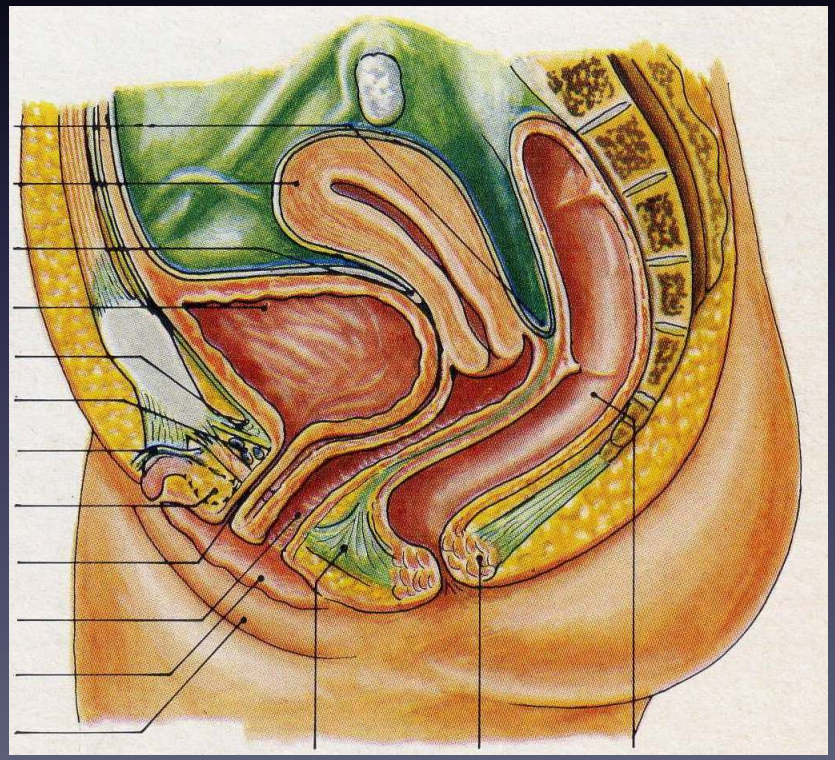
Techniques réflexes en ostéopathie - Robert Peronneaud-Ferré

Technique on ureters

- Ureter drainage

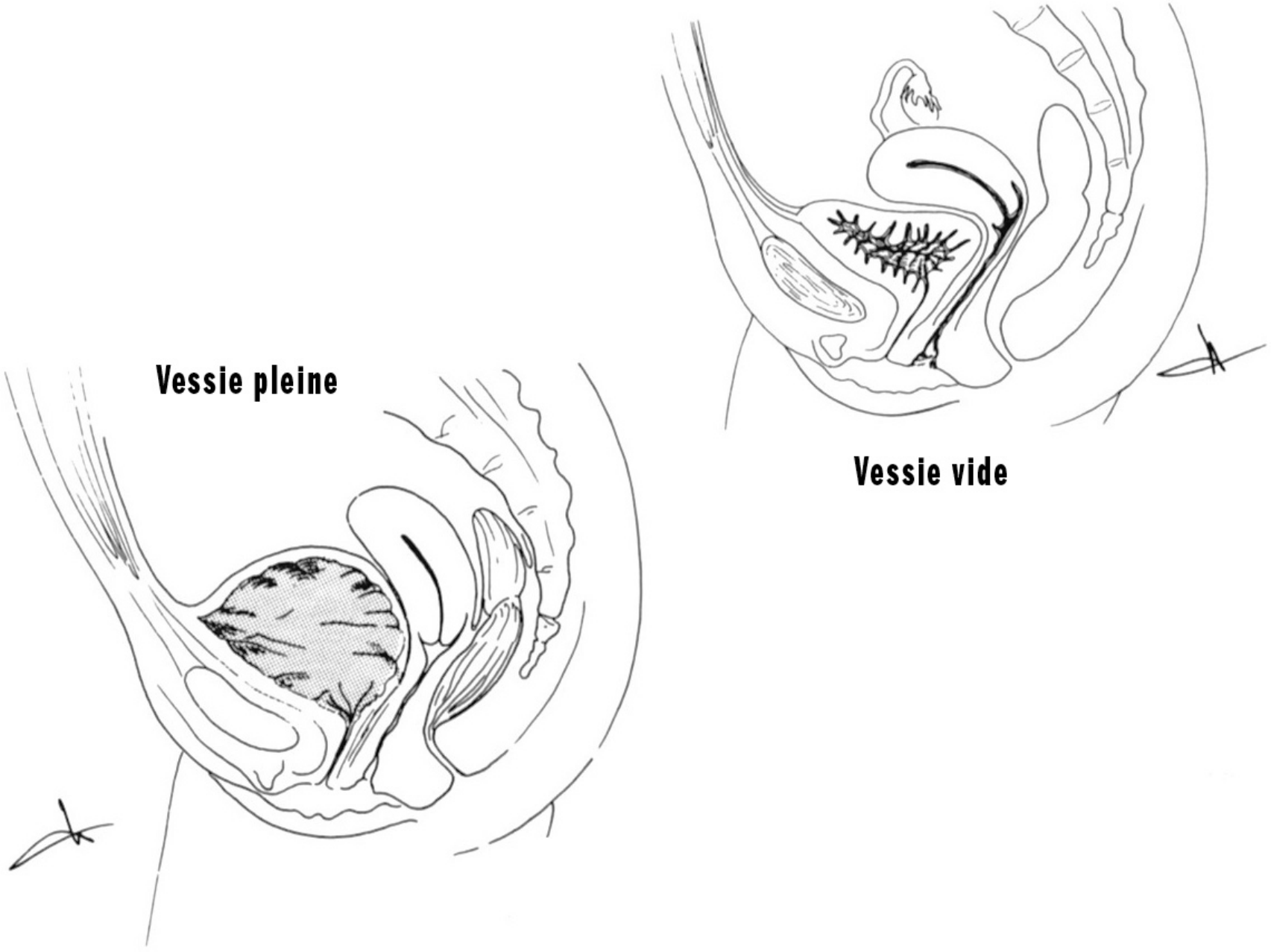
Bladder


Plexus de Santorini



Anatomy

- Median organ.
- **Apex** – located superiorly, pointing towards the pubic symphysis, connected to the umbilicus by the median umbilical ligament (urachus).
- **Body** – main part of the bladder, between the apex and the fundus
- **Fundus (or trigone)** – located posteriorly, tip of the triangle pointing forwards.
- **Neck** – formed by the convergence of the fundus and the two inferolateral surfaces, continuous with the urethra.


Vessie pleine
Vessie vide

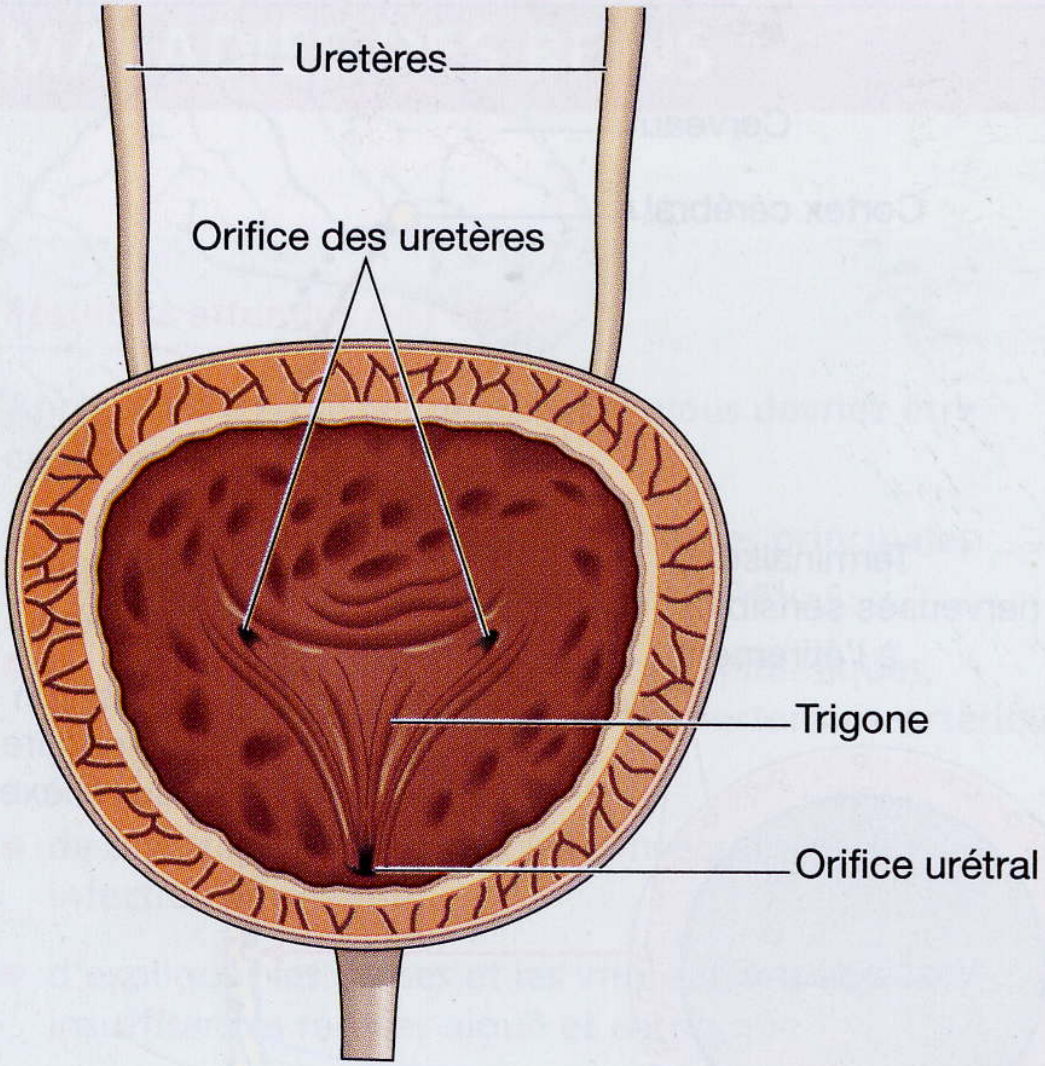


Figure 13.15 Coupe de la vessie montrant le trigone.

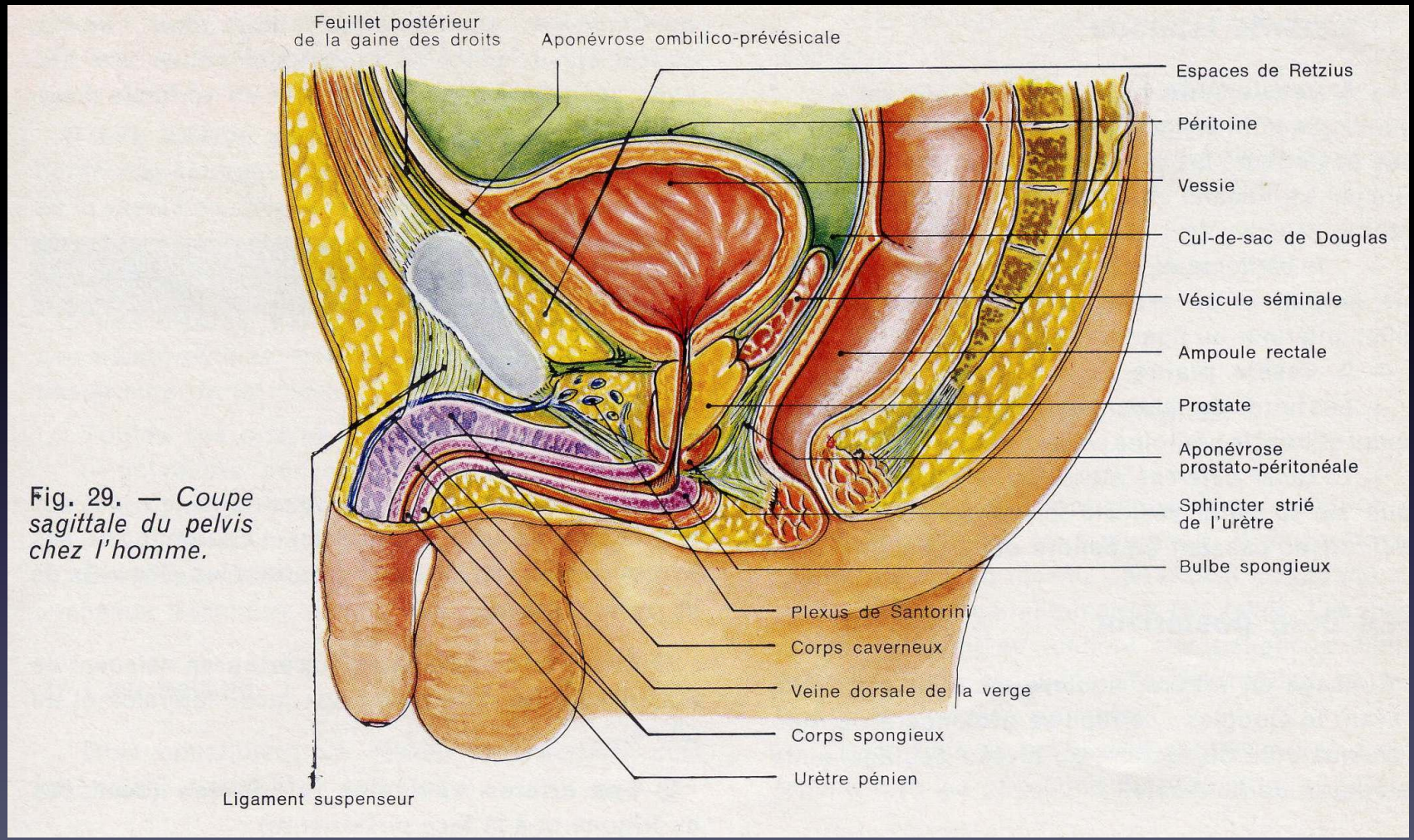
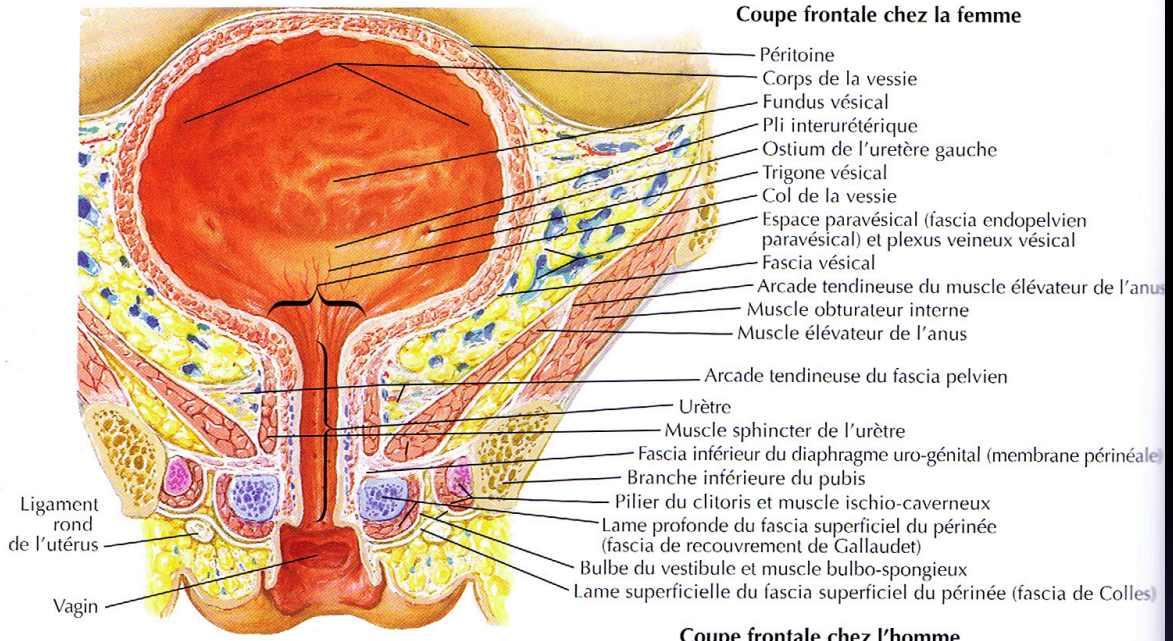


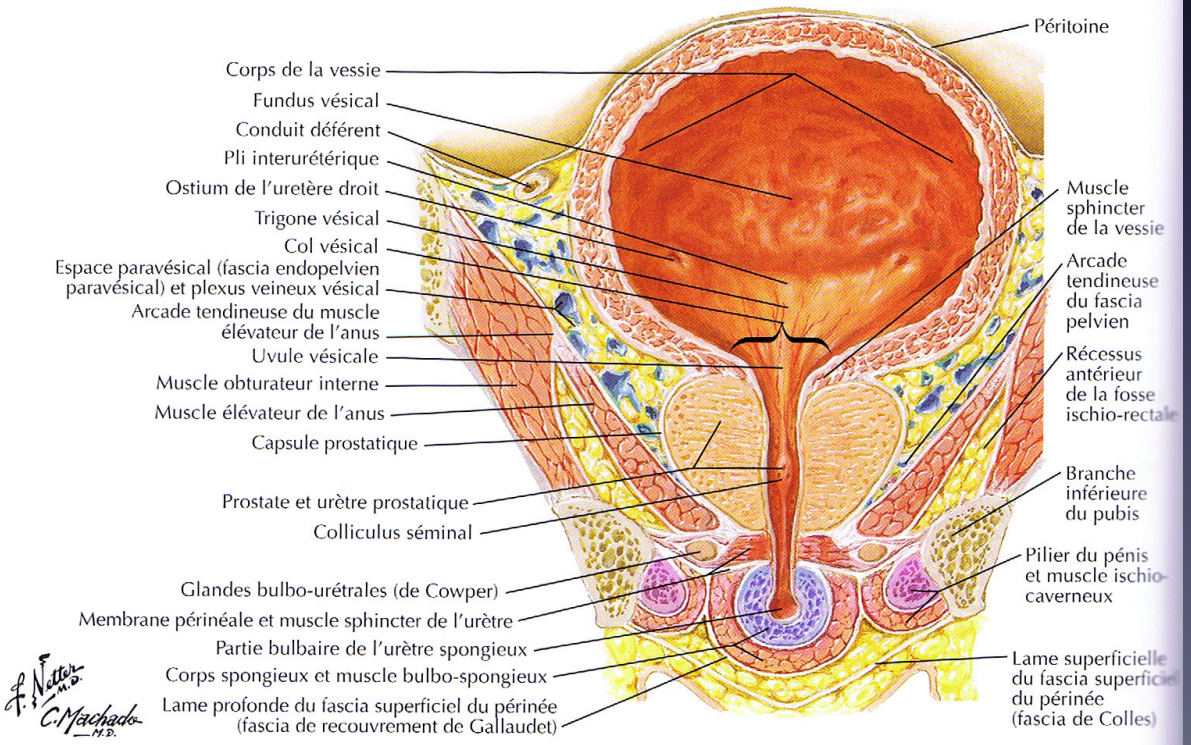
Fig. 29. — *Coupe sagittale du pelvis chez l'homme.*

- In order to contract during micturition, bladder wall contains specialized smooth muscle (**detrusor muscle**),
- Fibers are in multiple directions.

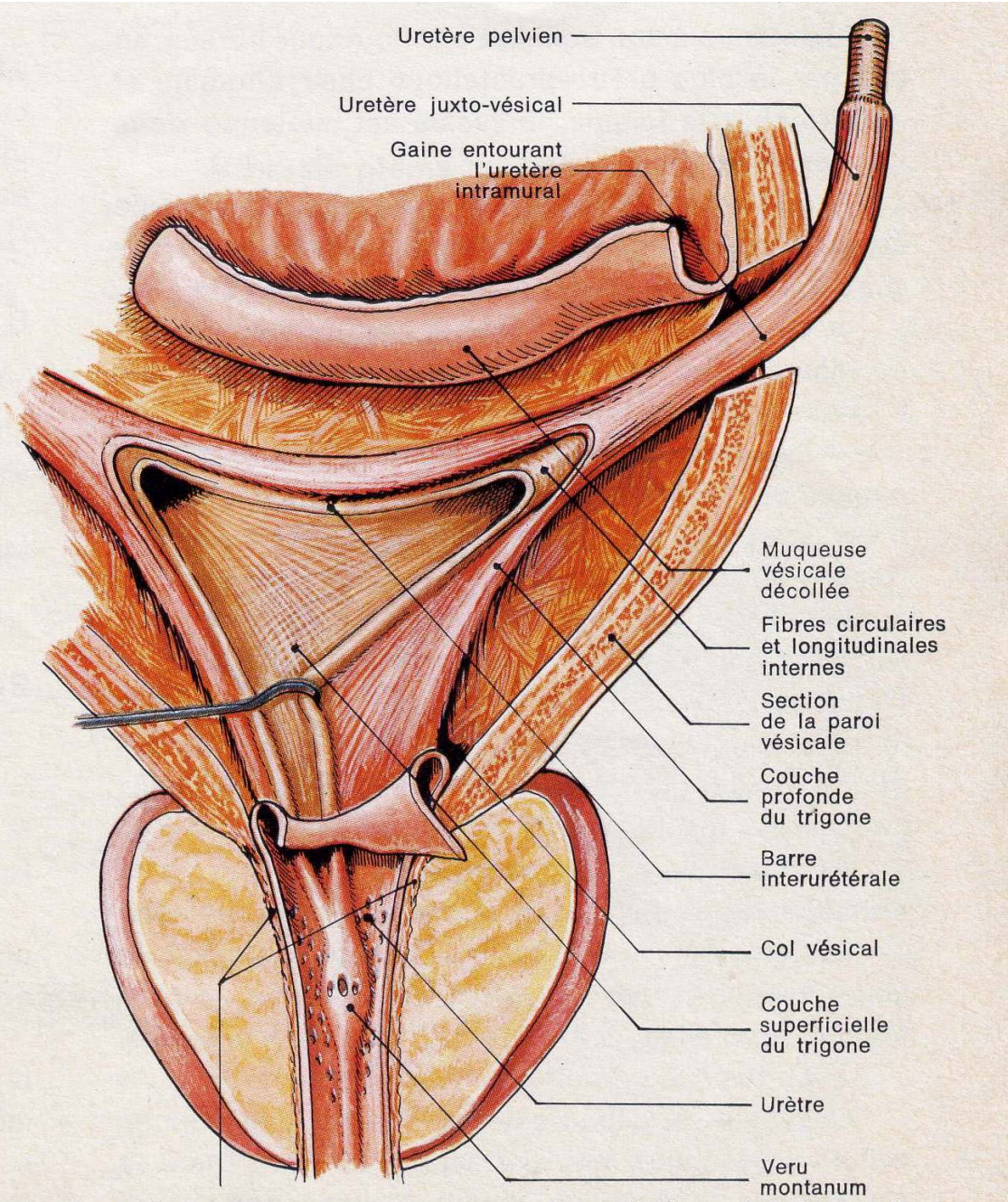
Coupe frontale chez la femme



Coupe frontale chez l'homme



F. Netter M.D.
C. Machado M.D.

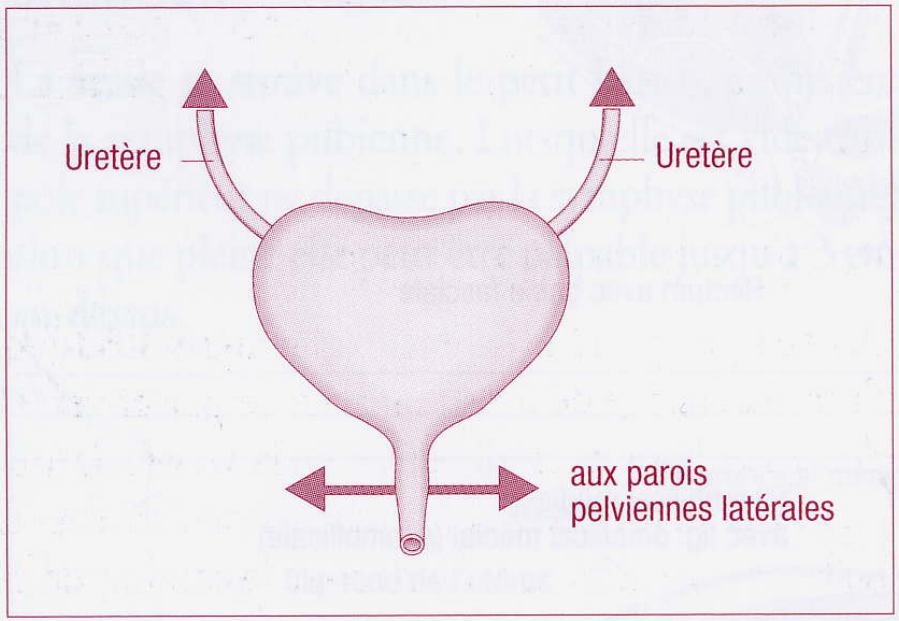


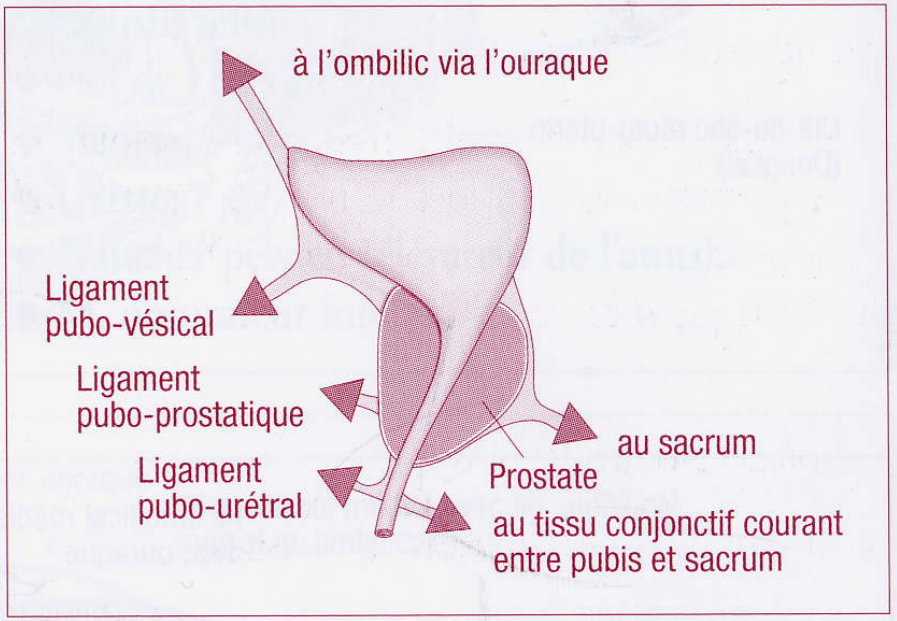
Fibres musculaires vésicales longitudinales se prolongeant dans la musculeuse de l'urètre

Fig. 28. — *Constitution du trigone à partir de la paroi du bas uretère.*

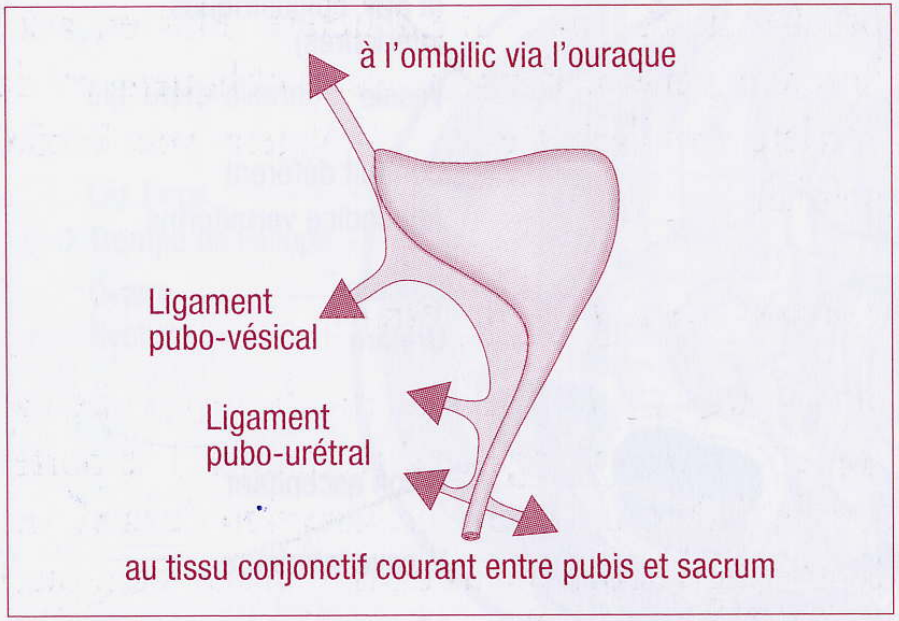
Attachments

- Urethra,
- Prostate (men),
- Pubovesical ligaments,
- Median umbilical ligaments,
- Urachus.

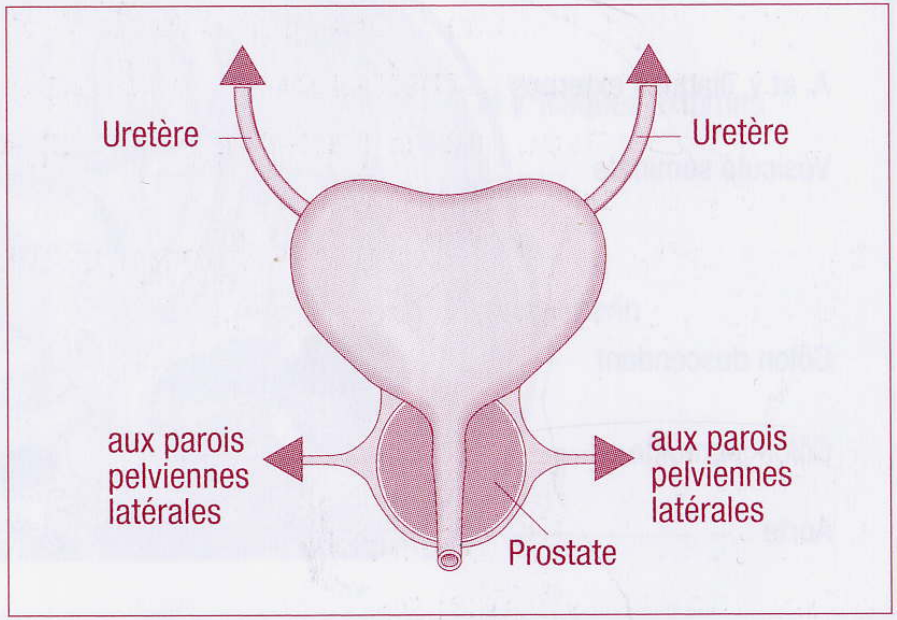




Ligaments de la vessie masculine, vue de côté



Ligaments de la vessie masculine, vue de face ▶



Blood supply

- Sup : superior vesical artery (internal iliac art.),
- Inf : inferior vesical art. (internal iliac art.),
- Ant : anterior vesical art. (internal pudendal art.).

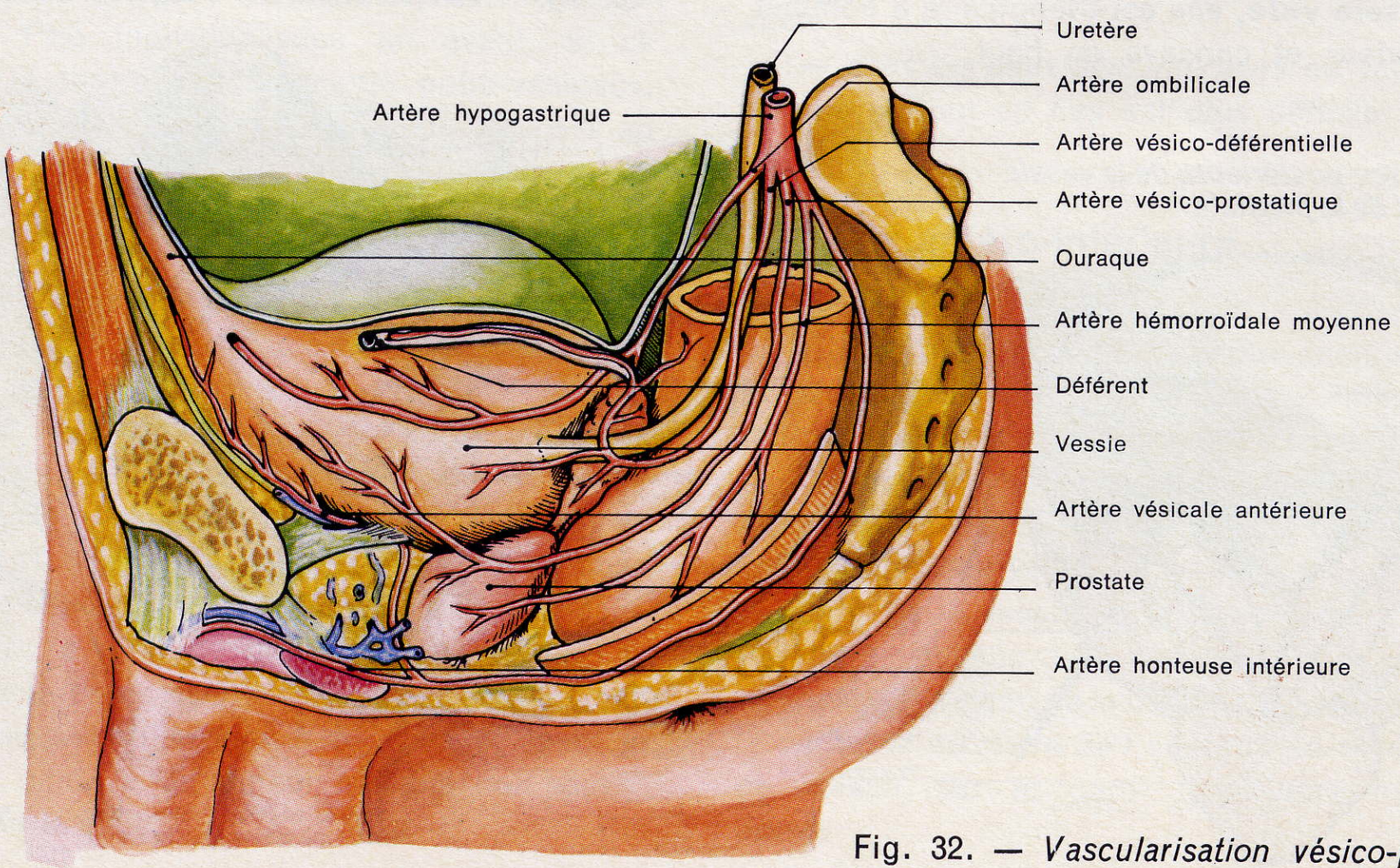
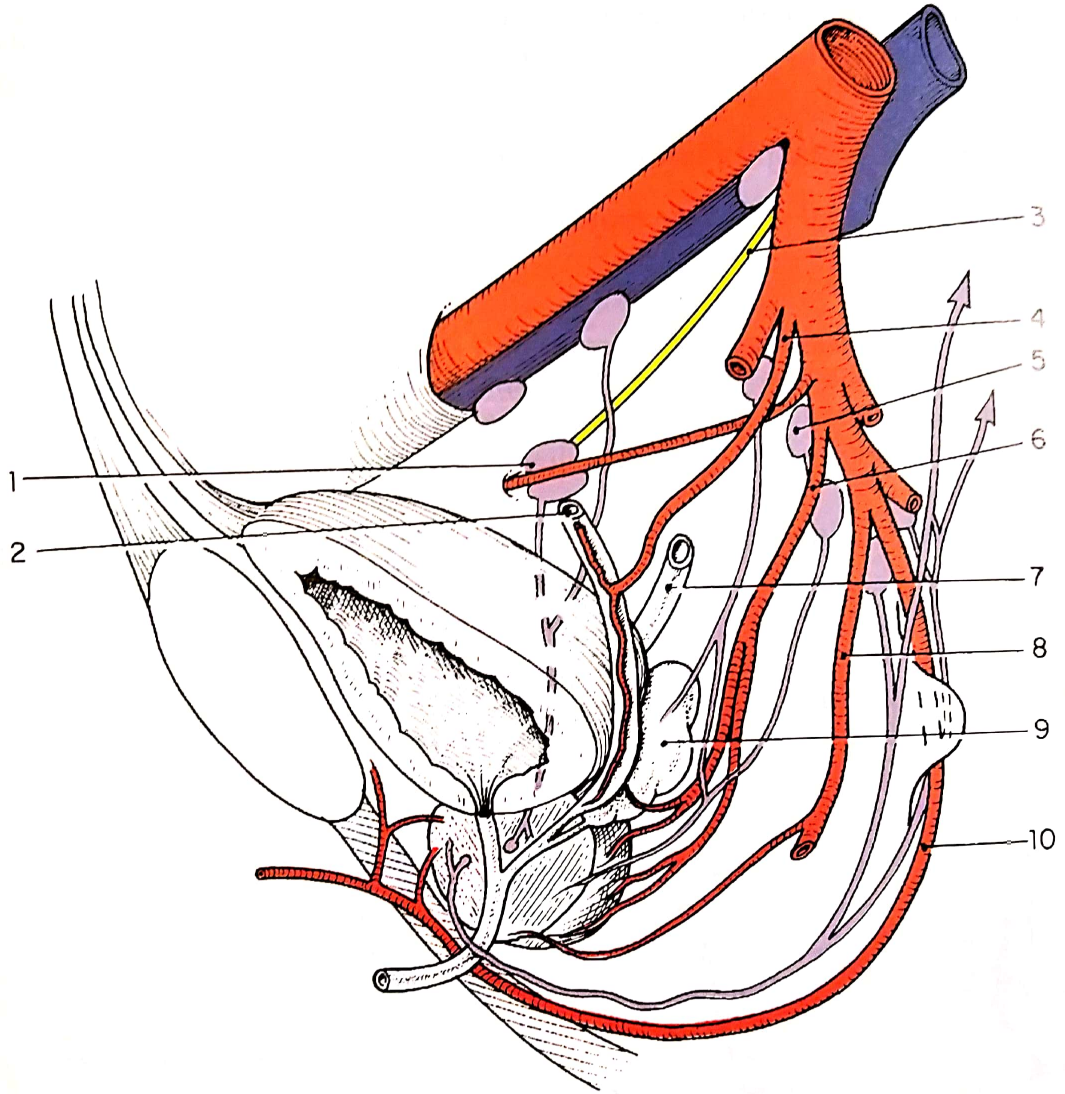


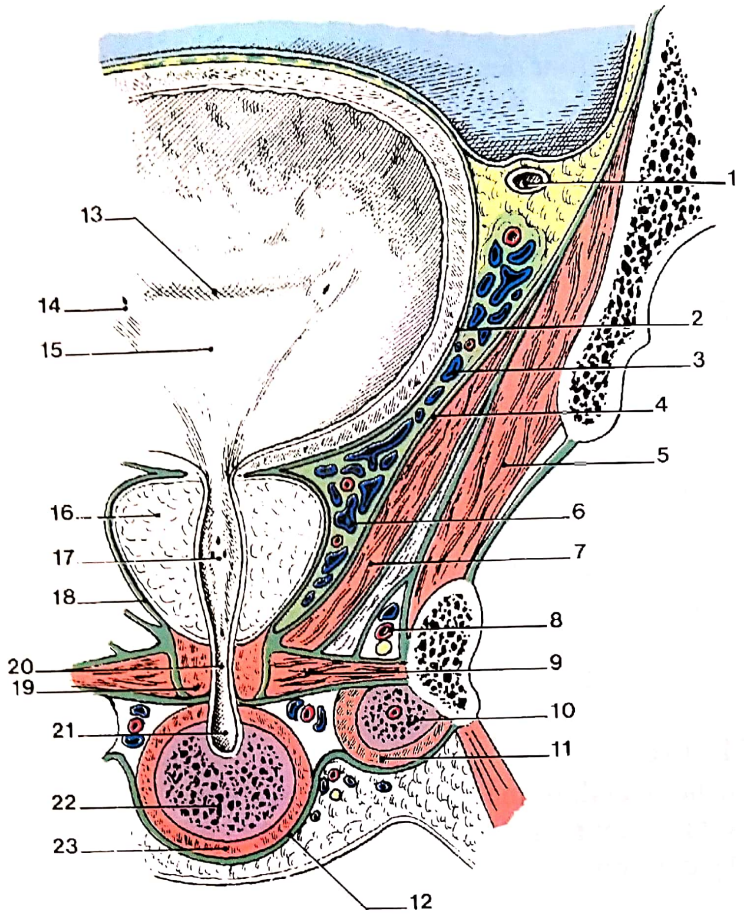
Fig. 32. — *Vascularisation vésico-prostatique.*



Vascularisation de la prostate et de la glande séminale

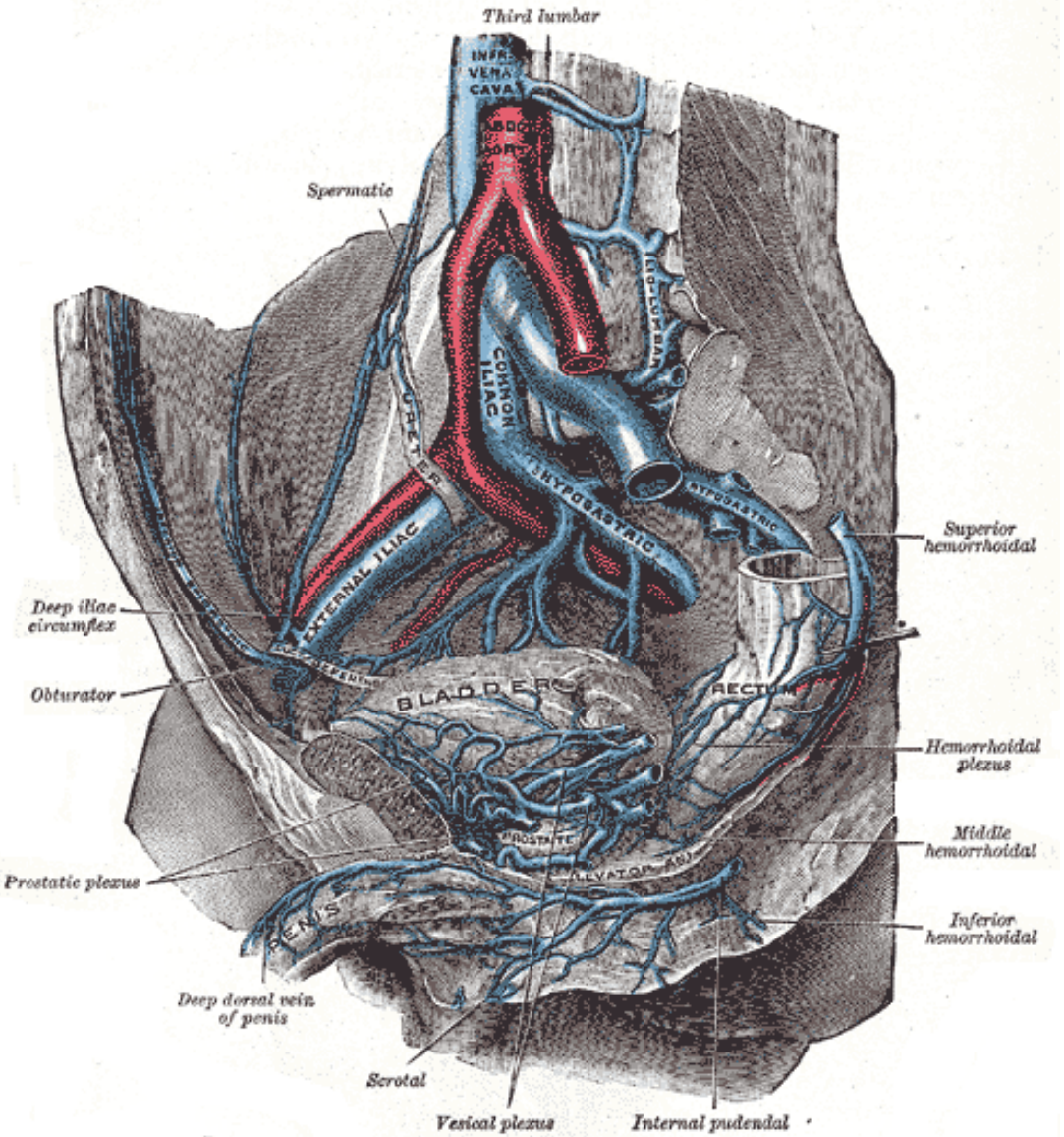
1 – nœuds lymphatiques obturateurs
2 – conduit déférent
3 – n. obturateur
4 – a. du conduit déférent
5 – nœuds iliaques internes
6 – a. vésicale inf.
7 – uretère
8 – a. rectale moyenne
9 – vésicule séminale
10 – a. honteuse interne

- Veins :
  - From a vesical plexus around the bladder (or directly from a vein), then they drain into the internal iliac vein.



Coupe frontale du petit bassin masculin (moitié gauche)

1 – conduit déférent
2 – fascia vésical
3 – plexus veineux vésical
4 – fascia pelvien pariétal
5 – m. obturateur int.
6 – plexus veineux prostatique
7 – m. élévateur de l'anus
8 – n. honteux, a et v. honteuses internes
9 – m. transverse profond
10 – corps caverneux
11 – m. ischio-caverneux
12 – fascia superficiel du périnée
13 – pli interurétérique
14 – ostium urétérique
15 – trigone vésical
16 – prostate
17 – collicule séminal
18 – fascia prostatique
19 – sphincter de l'urètre
20 – partie membranacée
21 – partie spongieuse
22 – corps spongieux
23 – m. bulbo-spongieux



Nerve supply

- Sympathetic : Through sup. and inf. hypogastric plexuses (origin : L1-L2 : lumbar splanchnic nerves -> relaxation of detrusor, contraction of the smooth sphincter),
- Parasympathetic : Pudendal nerves (S2-S4) through inf. hypogastric plexus -> Contraction of detrusor and relaxation of smooth sphincter,
- Pudendal nerve : conscious action of the striated urethral sphincter (and pelvic floor muscles).

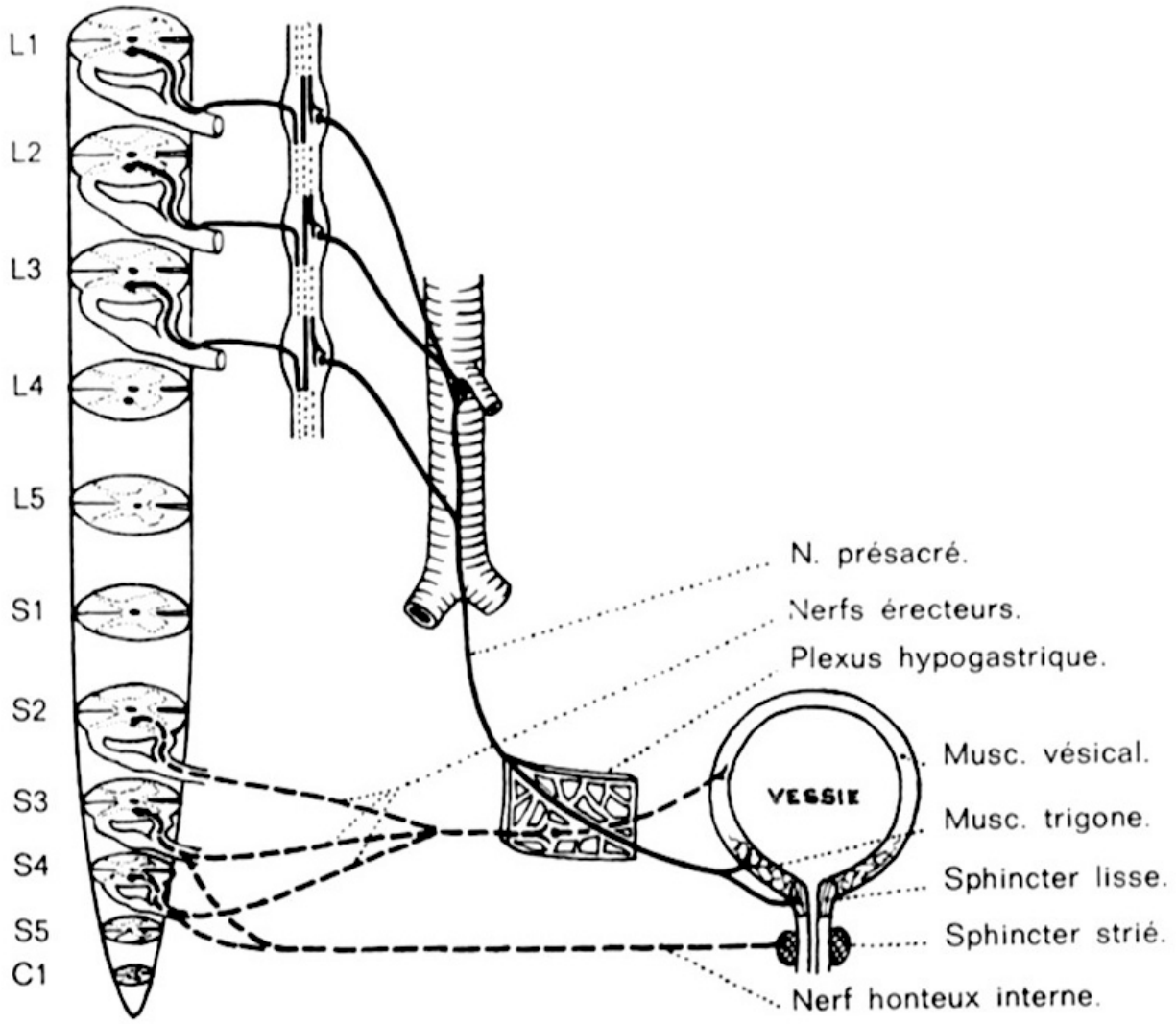
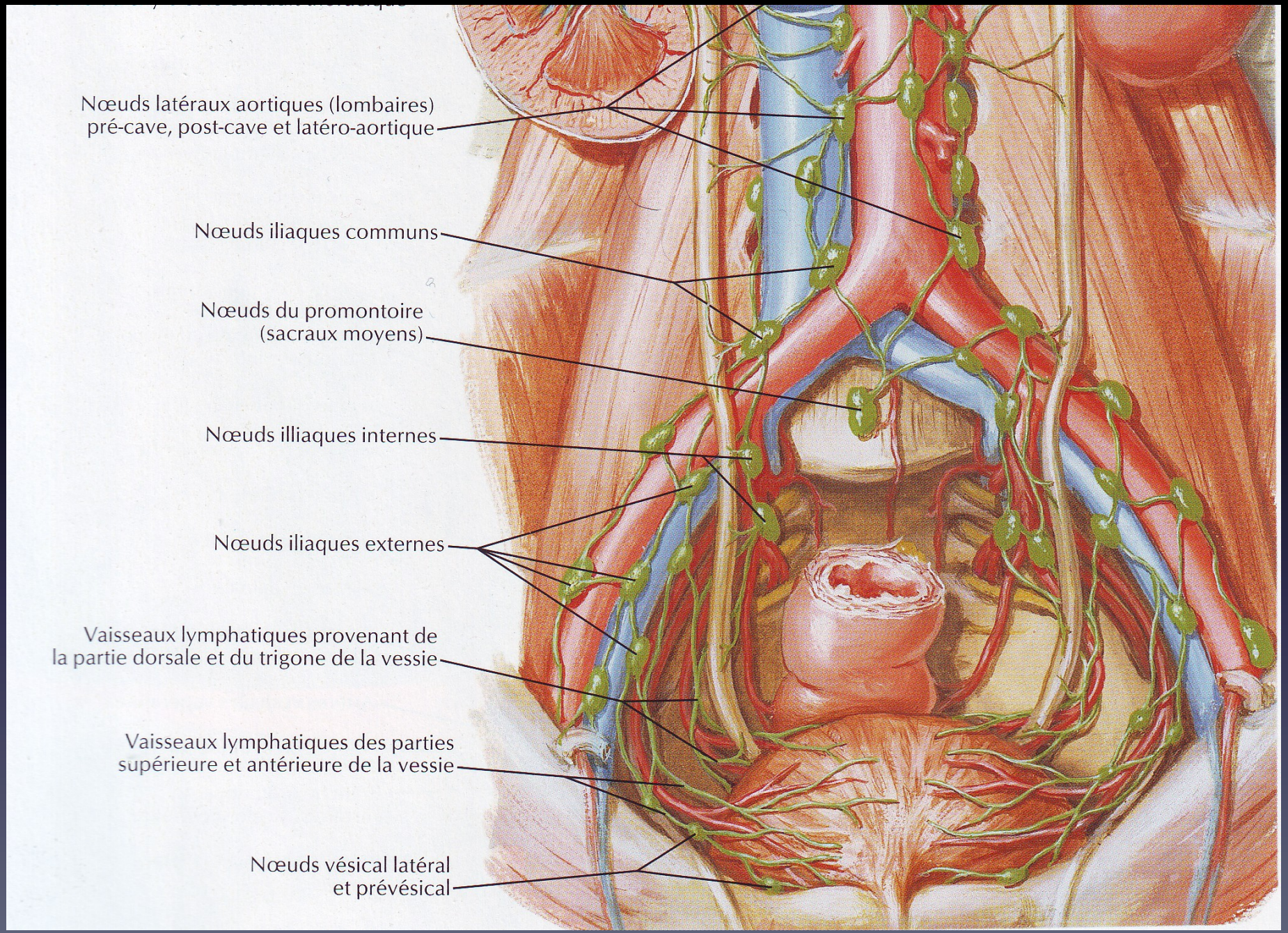


FIG. 308. — *Systématisation des voies sympathiques de la vessie.*

Lymphatics

- Anterior face : some paravesical ganglia -> external iliac ganglia.
- Posterior face : ganglia -> internal iliac ganglia.


Nœuds latéraux aortiques (lombaires)
pré-cave, post-cave et latéro-aortique
Nœuds iliaques communs
Nœuds du promontoire
(sacraux moyens)
Nœuds illiaques internes
Nœuds iliaques externes
Vaisseaux lymphatiques provenant de
la partie dorsale et du trigone de la vessie
Vaisseaux lymphatiques des parties
supérieure et antérieure de la vessie
Nœuds vésical latéral
et prévésical

Urachus

- Fibrous cord, from the anterior and superior edge of the bladder to the umbilicus, mostly called median umbilical ligament,
- Origin : Allantois (drains the waste through the umbilical cord).
- Link with liver by the round ligament of the liver.
- Glued to the umbilico prevesical aponeurosis (posterior to the transversalis fascia).

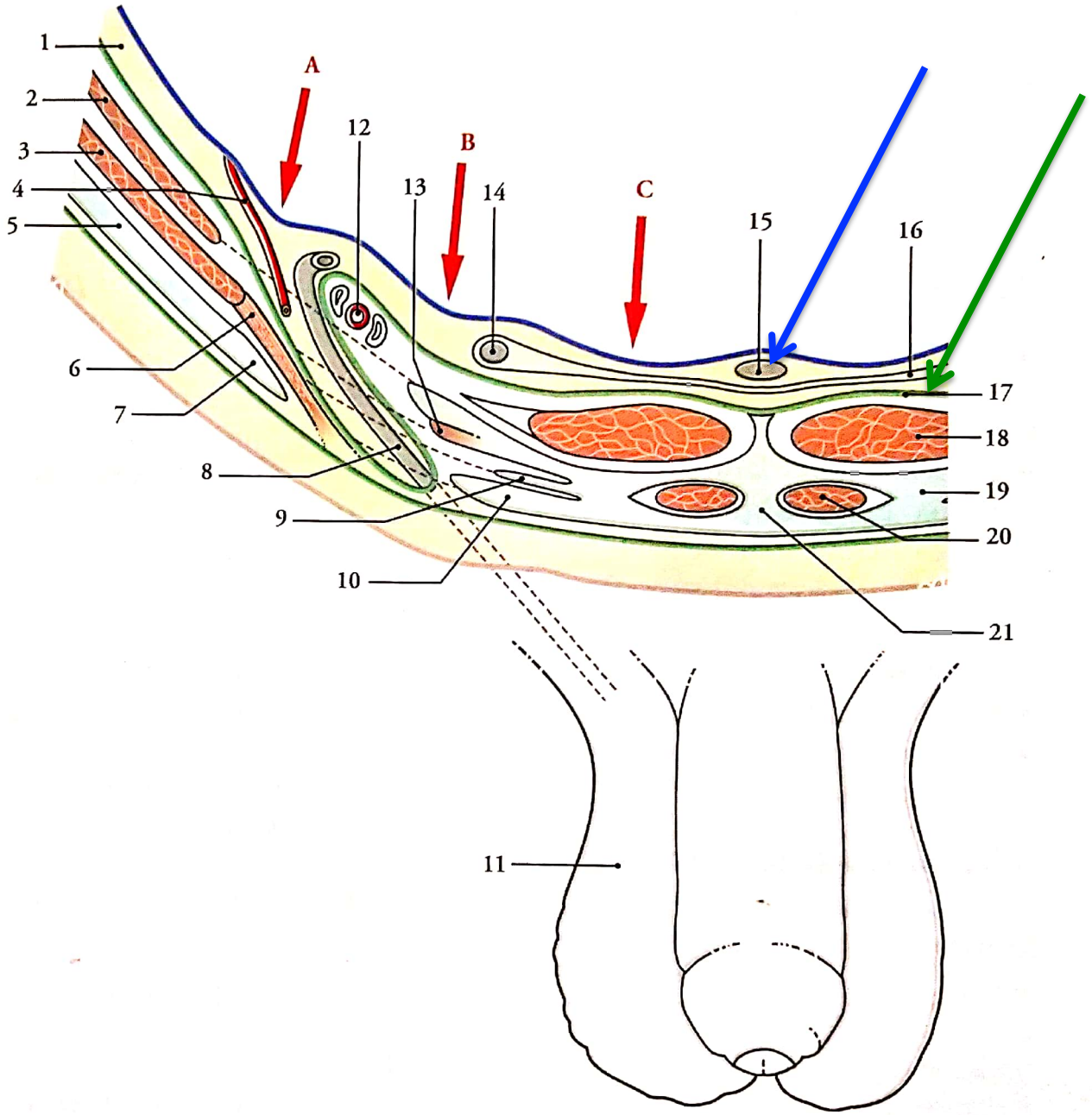


FIG. 14.29. Structures du canal inguinal
(coupe transversale et oblique)

A. fosse inguinale latérale
B. fosse inguinale médiale
C. fosse supra-vésicale
1. espace prépéritonéal
2. m. transverse de l'abdomen
3. m. oblique interne
4. a. testiculaire
5. m. oblique externe
6. m. crémaster (faisceau latéral)
7. pilier latéral
8. conduit déférent
9. ligament réfléchi
10. pilier médial
11. scrotum
12. a. et v. épigastriques inférieures
13. tendon conjoint
14. lig. ombilical médial
15. lig. ombilical médian
16. fascia ombilico-prévésical
17. fascia transversalis
18. m. droit de l'abdomen
19. gaine rectusienne
20. m. pyramidal
21. ligne blanche

Men

- Bladder is separated to the rectum by the rectovesical pouch (Douglas pouch) – Location of the seminal vesicles.

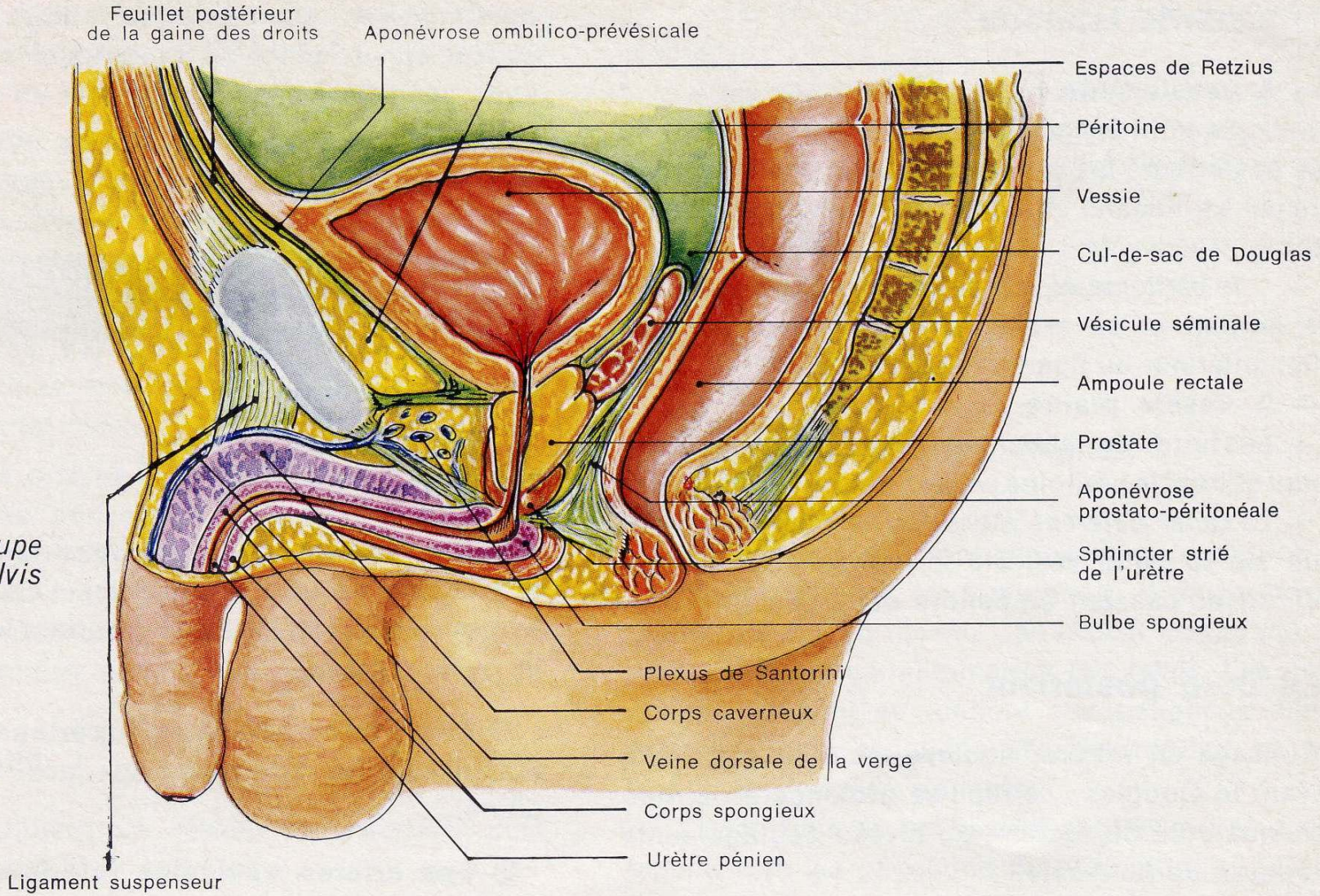
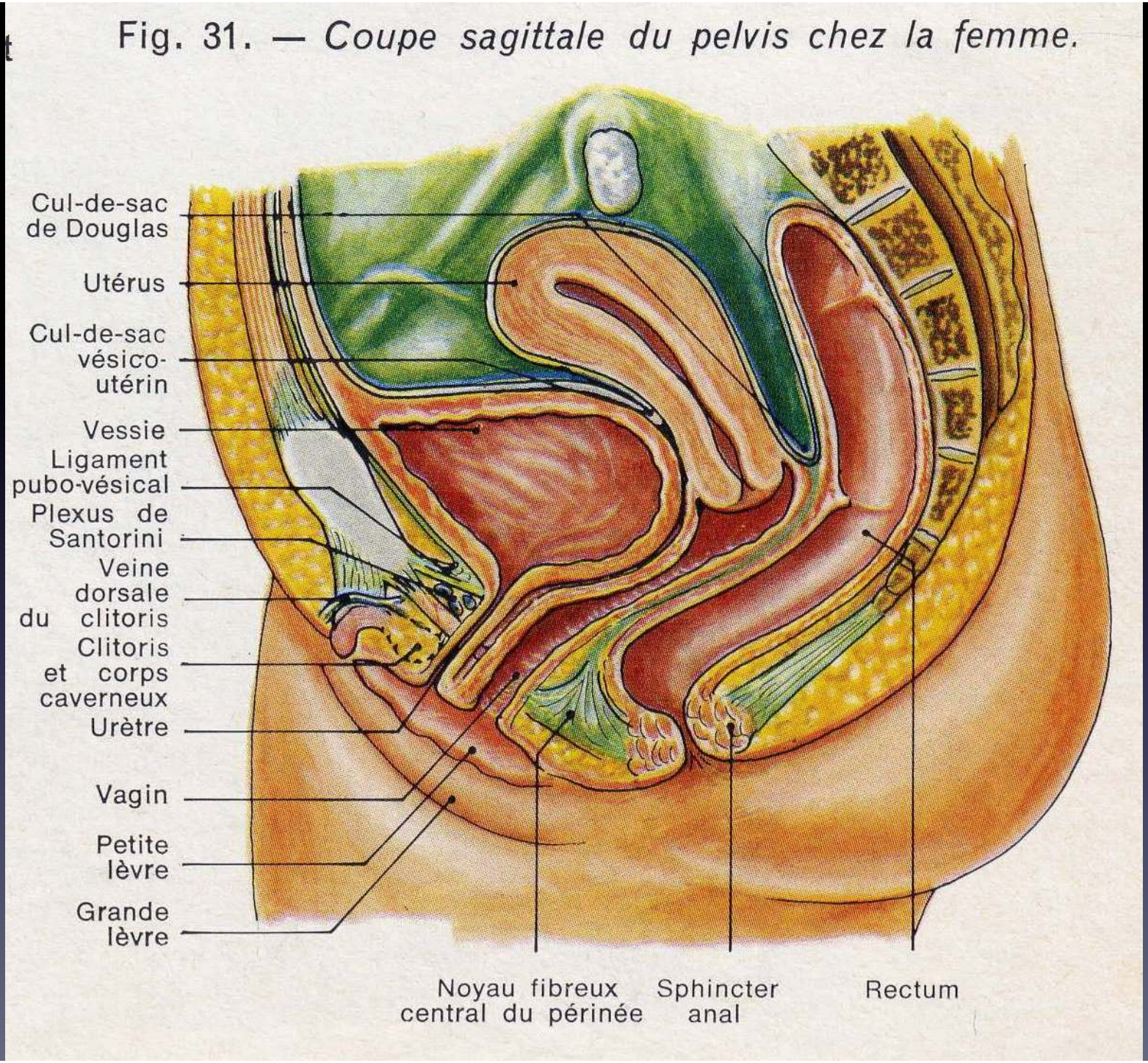


Fig. 29. — *Coupe sagittale du pelvis chez l'homme.*

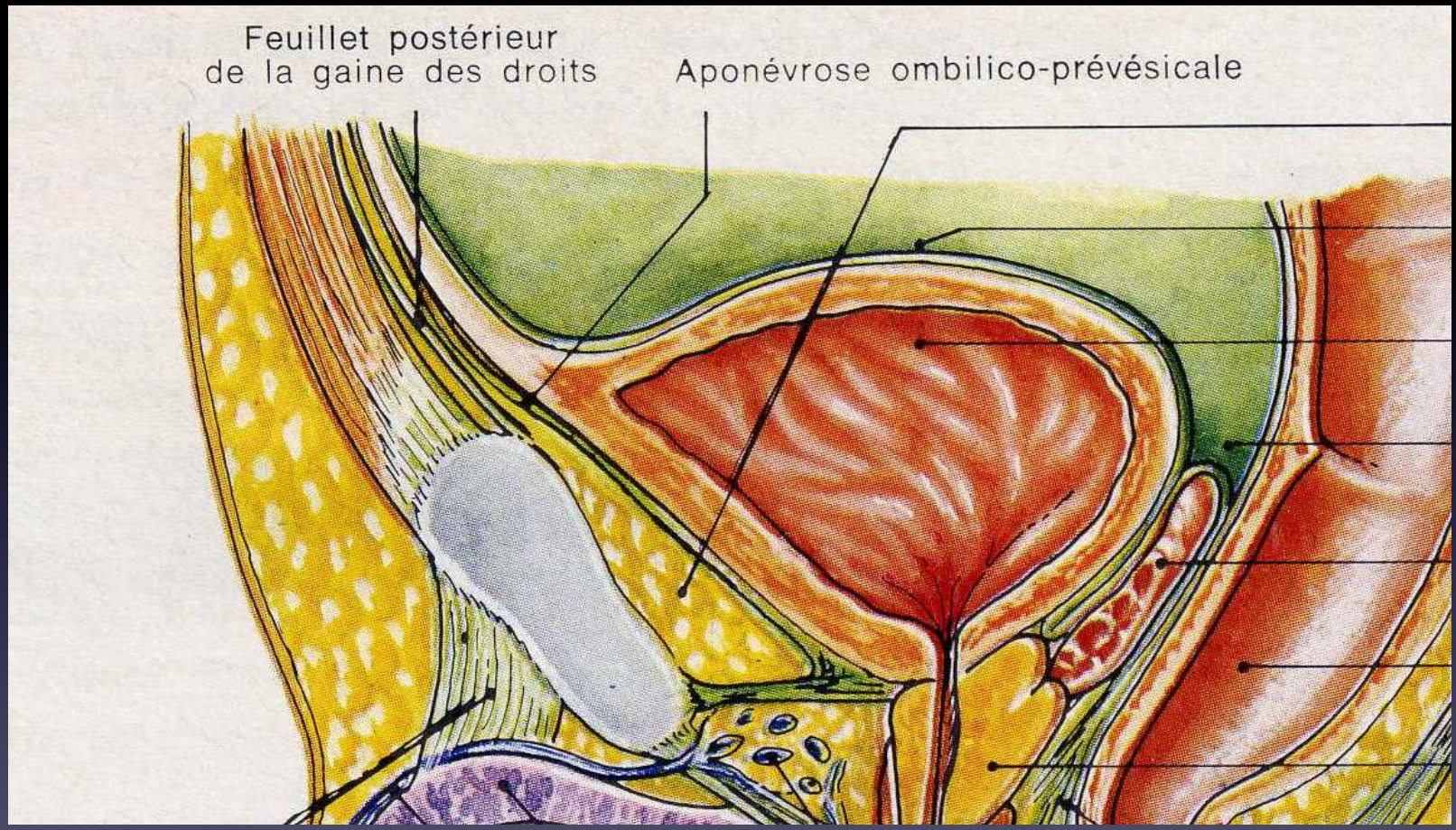
Women

- Bladder is separated to the uterus by the vesicouterine pouch.

Fig. 31. — *Coupe sagittale du pelvis chez la femme.*



- Anterior face : umbilicoprevesical aponeurosis.
- Limited on the sides by the medial umbilical ligaments (triangle shape),
- The base is fused with the pubovesical ligaments and the sacro-recto-vesical fasciae,
- In the center : urachus,
- Top : umbilic


Feuillet postérieur
de la gaine des droits
Aponévrose ombilico-prévésicale

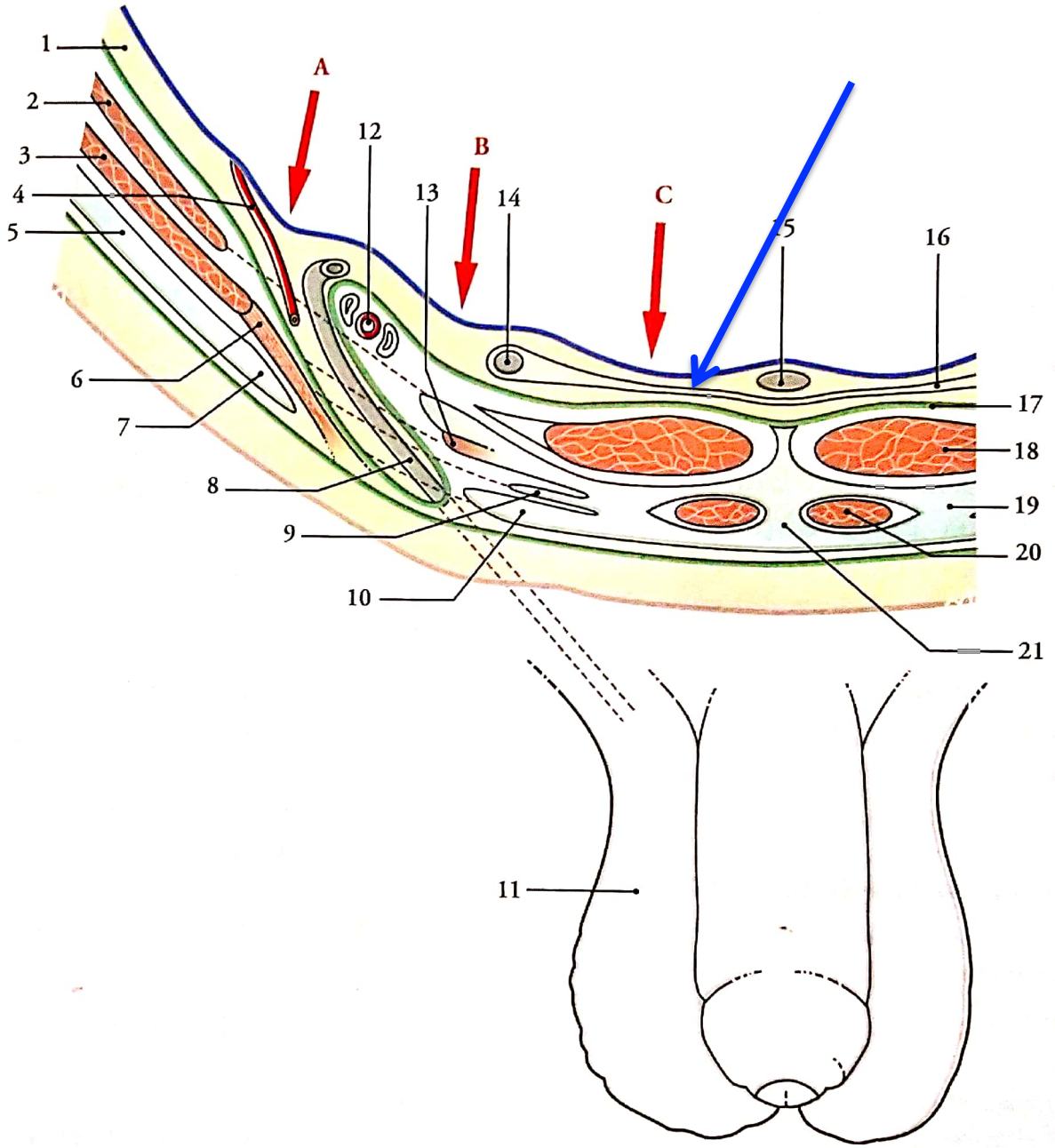
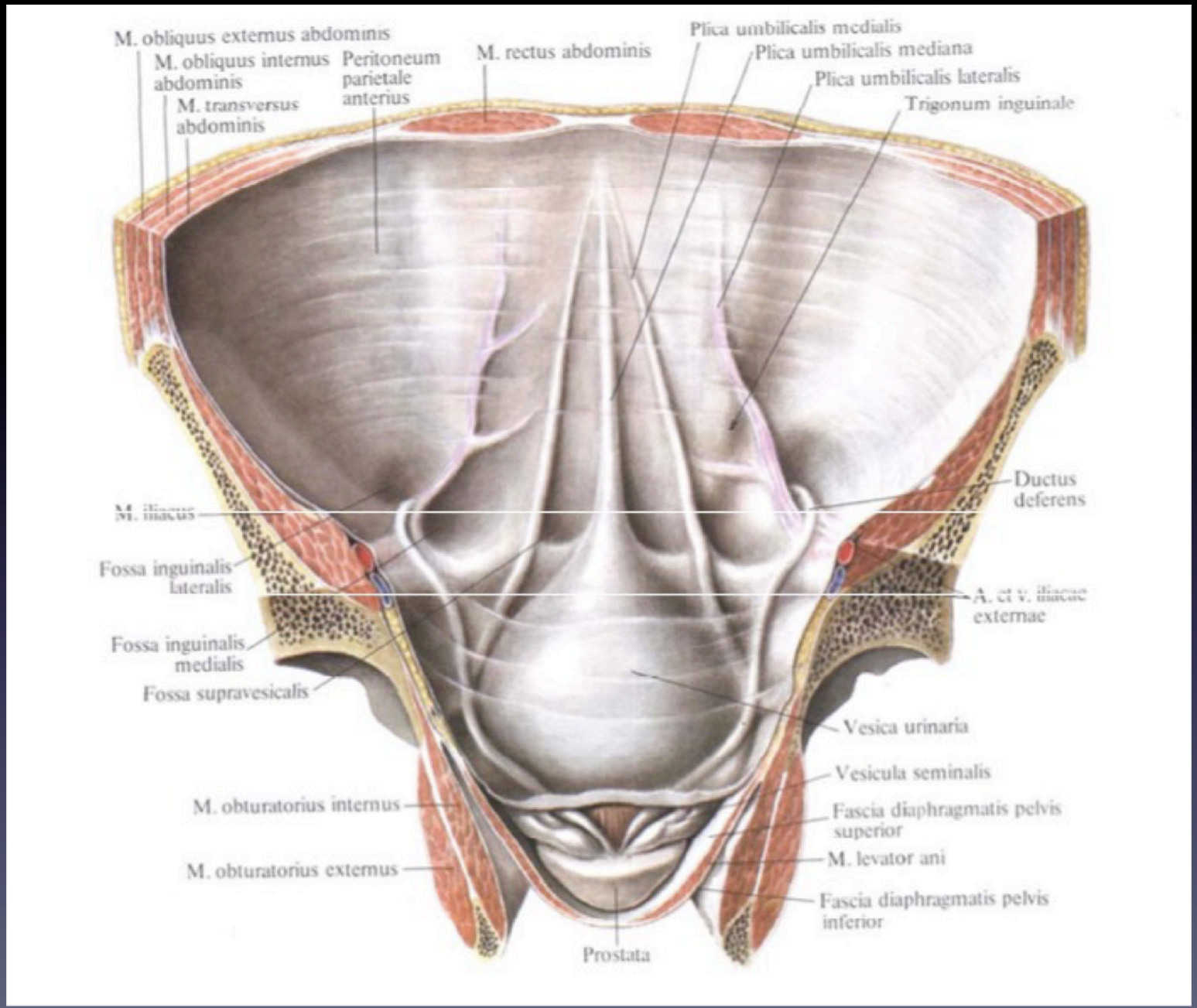


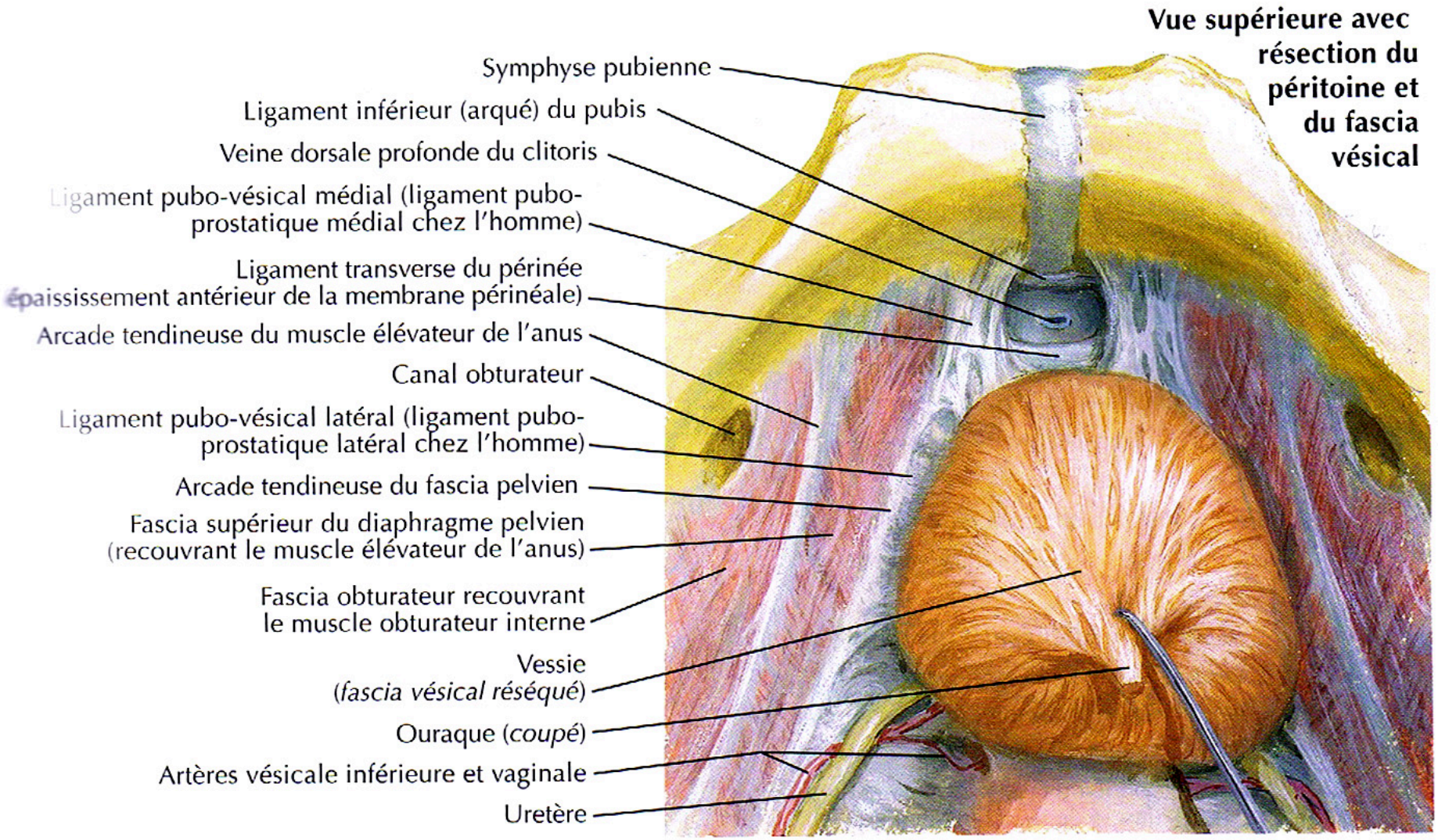
FIG. 14.29. Structures du canal inguinal
(coupe transversale et oblique)

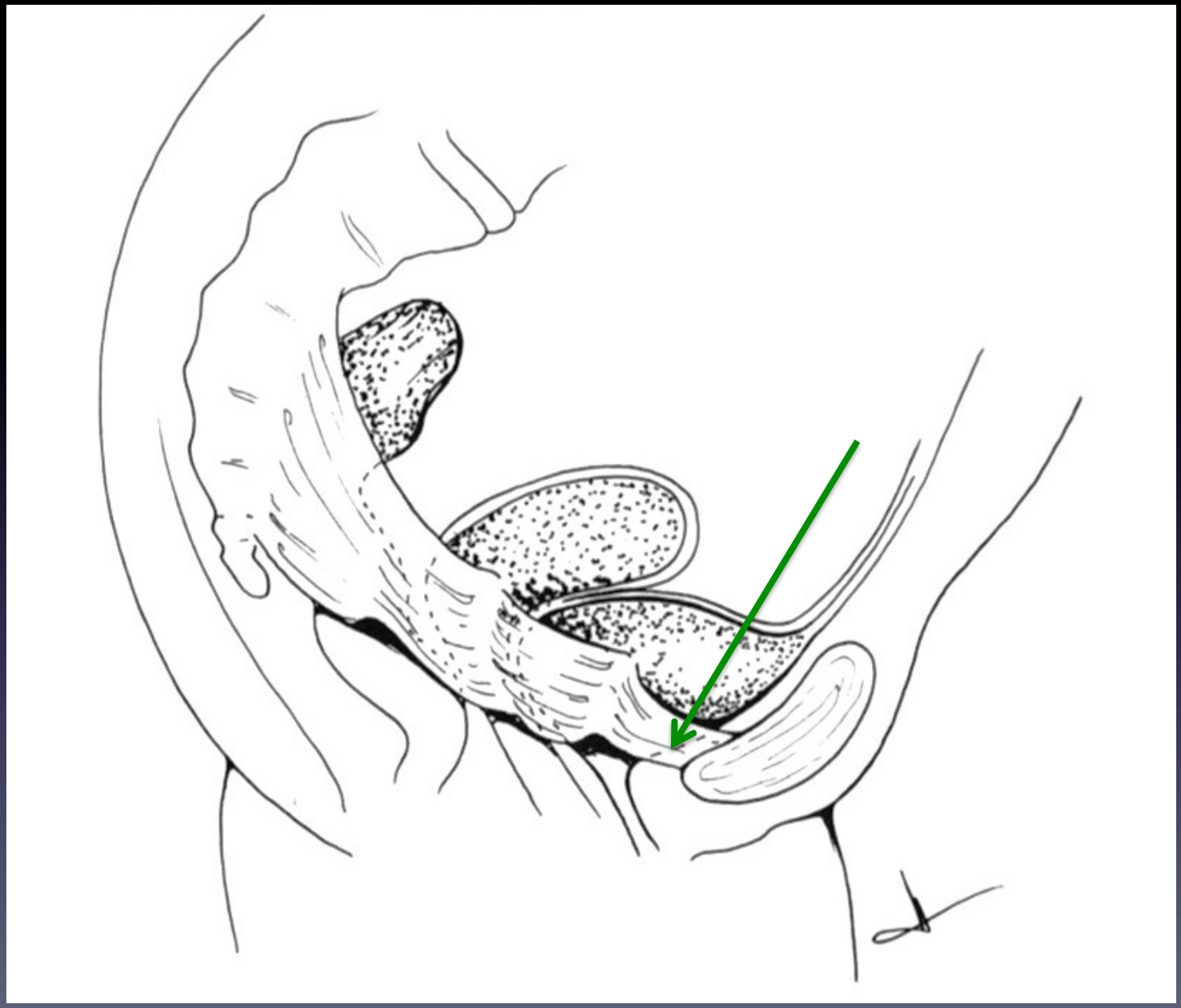
A. fosse inguinale latérale
B. fosse inguinale médiale
C. fosse supra-vésicale
1. espace prépéritonéal
2. m. transverse de l'abdomen
3. m. oblique interne
4. a. testiculaire
5. m. oblique externe
6. m. crémaster (faisceau latéral)
7. pilier latéral
8. conduit déférent
9. ligament réfléchi
10. pilier médial
11. scrotum
12. a. et v. épigastriques inférieures
13. tendon conjoint
14. lig. ombilical médial
15. lig. ombilical médian
16. fascia ombilico-prévésical
17. fascia transversalis
18. m. droit de l'abdomen
19. gaine rectusienne
20. m. pyramidal
21. ligne blanche


M. obliquus externus abdominis
M. obliquus internus abdominis
M. transversus abdominis
Peritoneum parietale anterius
M. rectus abdominis
Plica umbilicalis medialis
Plica umbilicalis mediana
Plica umbilicalis lateralis
Trigonum inguinale
Ductus deferens
M. iliacus
Fossa inguinalis lateralis
A. et v. iliacae externae
Fossa inguinalis medialis
Fossa supravesicalis
Vesica urinaria
Vesicula seminalis
M. obturatorius internus
Fascia diaphragmatis pelvis superior
M. levator ani
M. obturatorius externus
Fascia diaphragmatis pelvis inferior
Prostata

Pubovesical ligaments

- From the posterior face of the pubic bone to the anterior face of the bladder,
- Backward + downward.


Vue supérieure avec résection du péritoine et du fascia vésical
Symphyse pubienne
Ligament inférieur (arqué) du pubis
Veine dorsale profonde du clitoris
Ligament pubo-vésical médial (ligament pubo-prostatique médial chez l'homme)
Ligament transverse du périnée (épaississement antérieur de la membrane périnéale)
Arcade tendineuse du muscle élévateur de l'anus
Canal obturateur
Ligament pubo-vésical latéral (ligament pubo-prostatique latéral chez l'homme)
Arcade tendineuse du fascia pelvien
Fascia supérieur du diaphragme pelvien (recouvrant le muscle élévateur de l'anus)
Fascia obturateur recouvrant le muscle obturateur interne
Vessie (*fascia vésical réséqué*)
Ouraque (*coupé*)
Artères vésicale inférieure et vaginale
Uretère



Pathology

Cystitis

- Female +++,
- 50% of women,
- Infection+++.

- Etiologies / risk factors :
  - Hygièna : too much or not enough,
  - Infection : E coli, bilharziasis, etc…,
  - After radiation (Xray therapy),
  - Medications,
  - Others.

Cystitis

- Symptoms :
  - Burning,
  - Pollakiuria,
  - Urinary urgency,
  - Pelvic pain/lumbar pain,
  - Hematuria/pyuria,
  - No fever (sometimes).
- Medical tests :
  - Urine culture.

Bladder cancer

- Urothelial cancer, vesical polyps.

- Etiologies/risk factors :
  - Tobacco +++ (until 14 years after eviction),
  - Chronical inflammation : lithiasis, bilharziasis, probe…,
  - Environmental factors (professional : chemical, oil…).

Bladder cancer

- Symptoms :
  - Hematuria (especially if past smokers),
  - Dysuria,
  - Bad health condition (advanced stage).
- Medical tests :
  - Echography,
  - Intravenous urography,
  - Uroscanner and MRI,
  - Endoscopy (biopsy).

Osteopathy

- High lumbar pain or lower,
- Pelvic pain / bearing down,
- Urinary burning,
- Pollakiuria / dysuria,
- Stress urinary incontinence,
- Post partum +++,
- Abdominal ptosis,
- Uterus anteversion,
- Cystitis/prostatitis/salpingitis sequelae.

Practice

Tests

- Test of the median umbilical ligament (urachus) :
  - Elastic = OK,
  - No answer = adhesions,
  - Non elastic = shrinkage.
- + correction

Tests

- Test of the medial umbilical ligaments :
  - Same answers
- + correction

Tests

- Test of pubovesical ligaments
  - 45°
- + correction

Tests

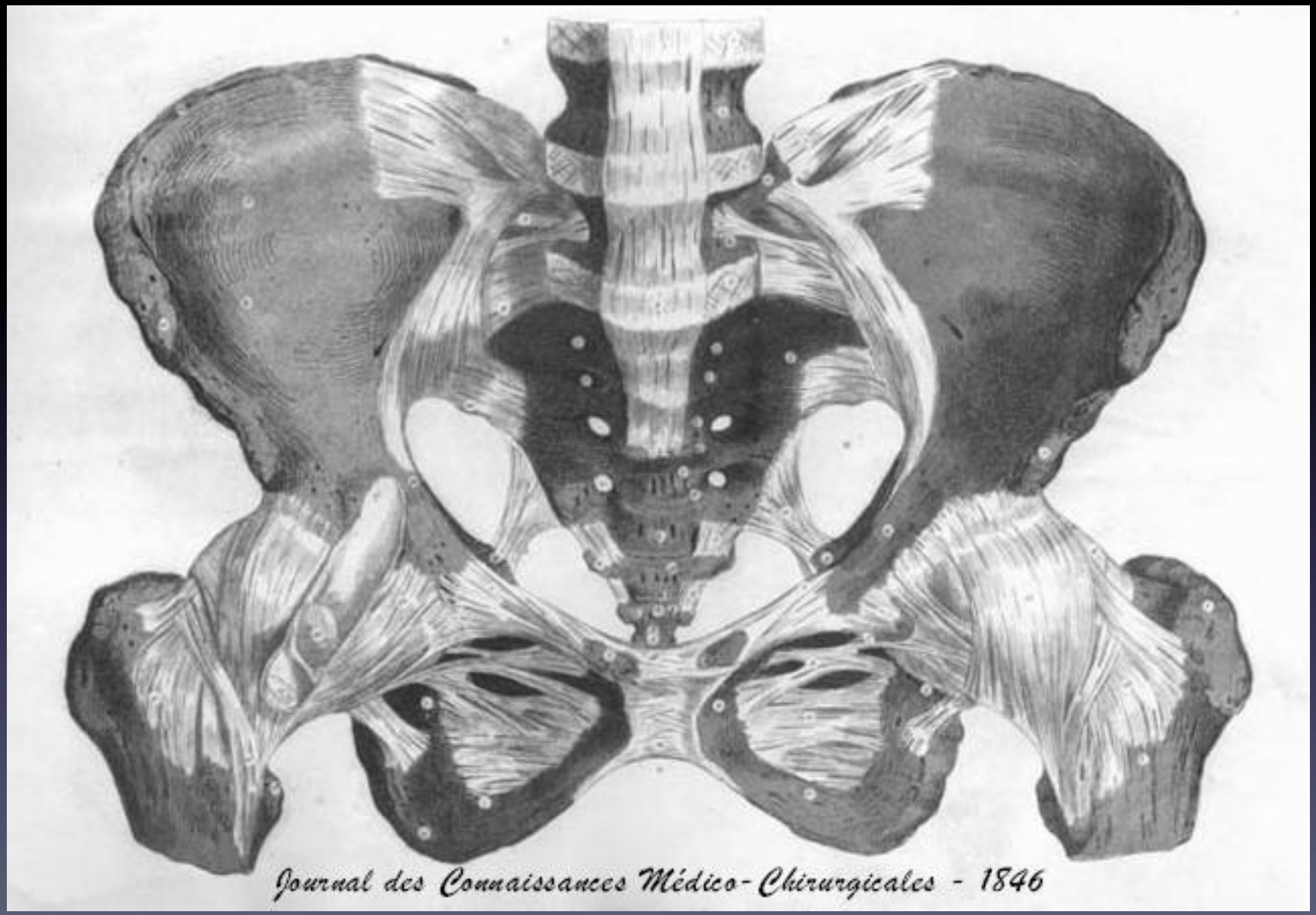
- Bladder lift
  - Check ligaments first
- + correction

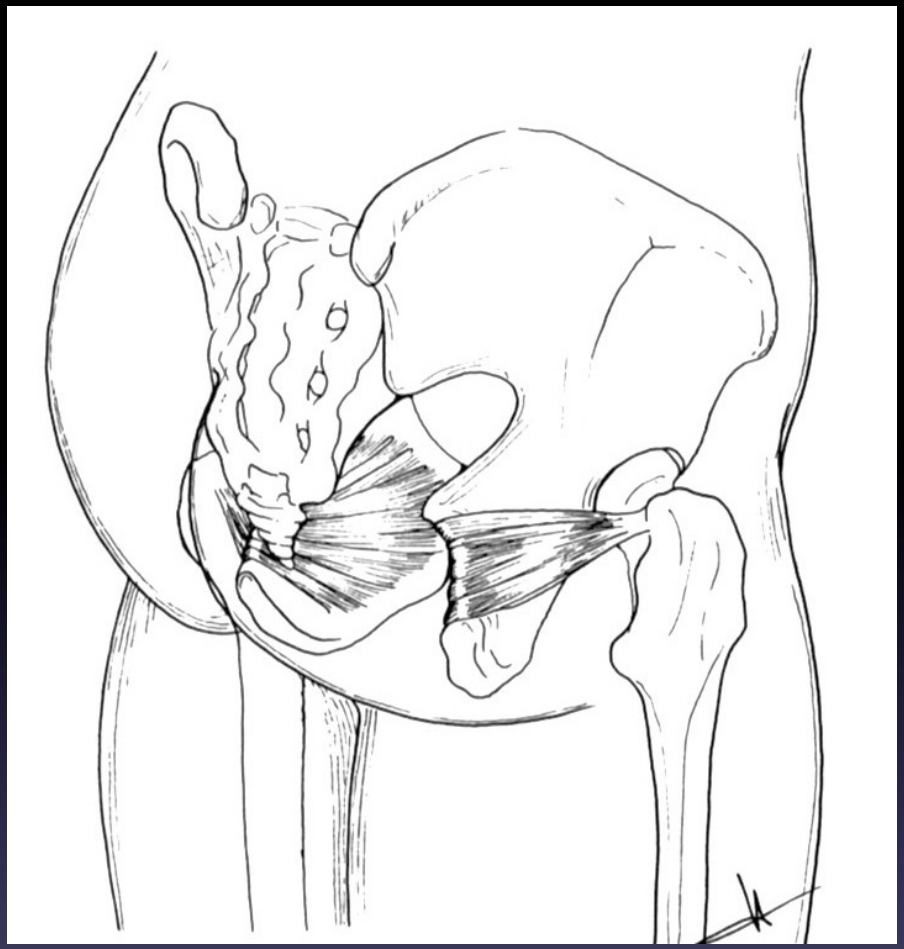
Tests

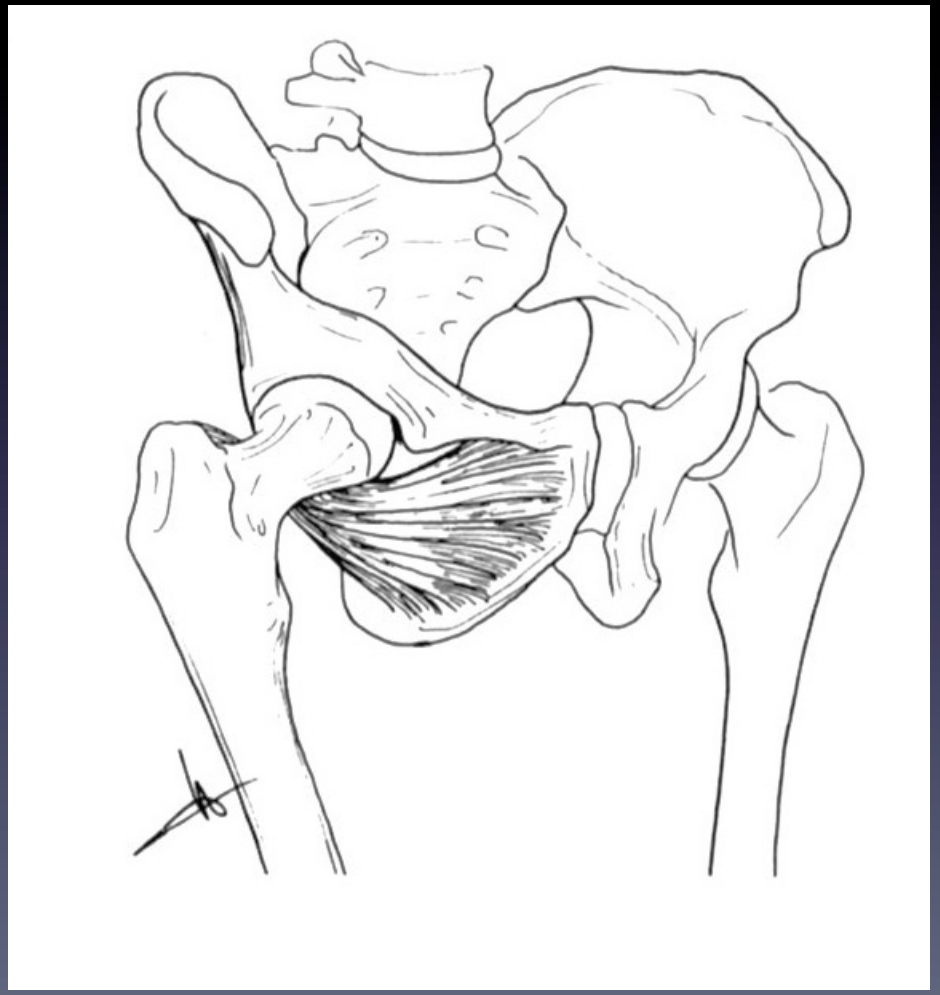
- Test of the lateral mobility of the bladder
  - Legs flexed
- + correction

Tests

- Test of the foramen obturator with the bladder :
  - Adhesions+++
- + correction


Journal des Connaissances Médico-Chirurgicales - 1846





Corrections

- Lift of the intestine

Corrections

- Correction of a bladder ptosis