

## Autonomní nervý systém (ANS)

složka centrální

složka periferní



**sympatikus (pars sympathica)**

**Fight or flight**

**parasympatikus (pars parasympathica)**

**Rest or digest**

**enterický systém**



**91. Obecná stavba a členění ANS**

**92. Pars cervicalis partis sympathicae, ganglia, nervy a jejich inervační oblasti**

**93. Pars thoracica partis sympathicae, plexy, ganglia, nervy a jejich inervační oblasti**

**94. Inervace srdce**

**95. Pars abdominalis partis sympathicae, plexy, ganglia, nervy a jejich inervační oblasti**

**96. Enterický systém, strukturální stavba**

**97. ANS pánve, plexy a jejich inervační oblasti**

**98. Plexus brachialis – vznik, rozdělení na části**

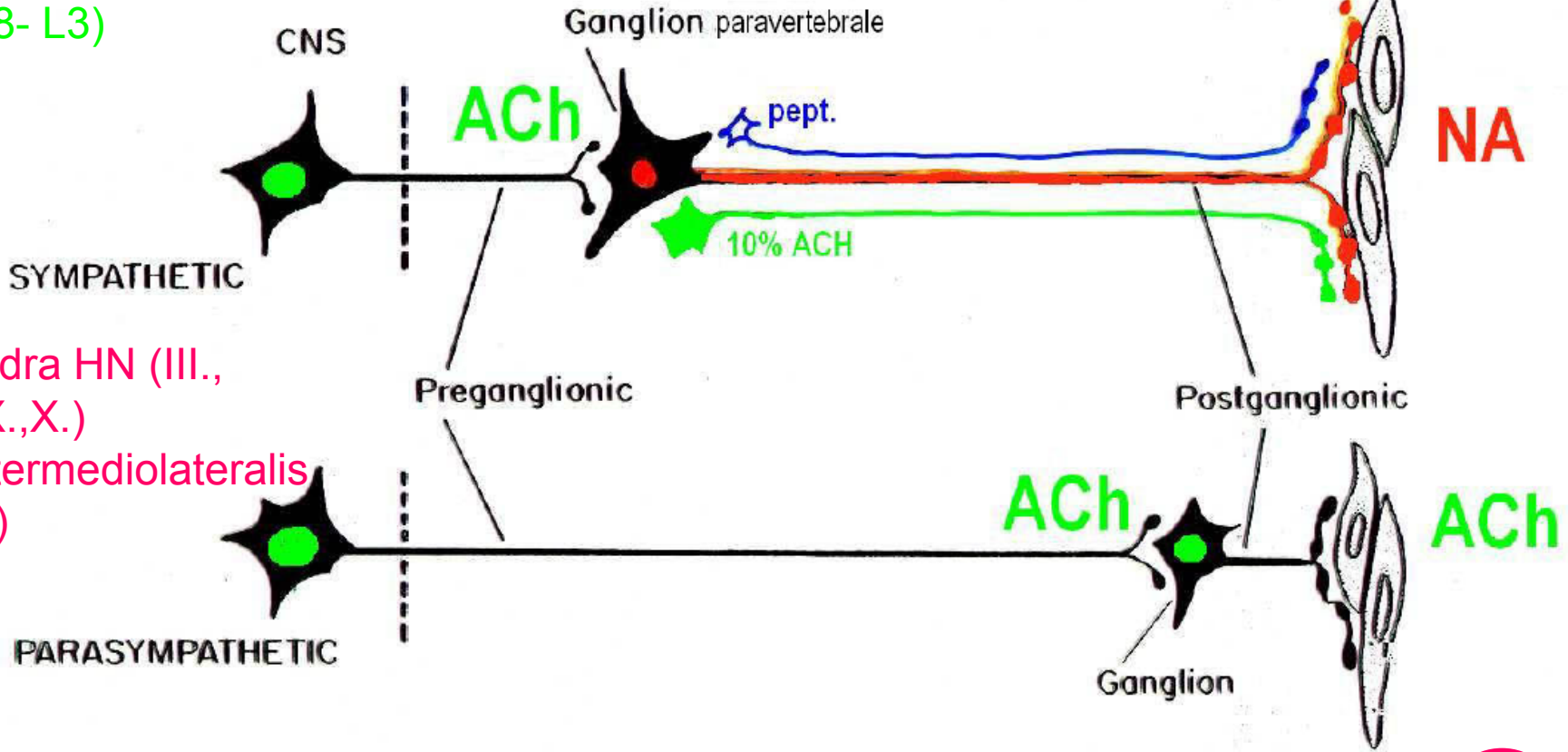
**99. N. thoracodorsalis, n. dosalis scapulae, n. subclavius, nn. pectorales – průběh a inervační oblasti**

**100. N. thoracicus longus n. suprascapularis, n. subscapularis – průběh a inervační oblasti**

**101. Periferní neurony autonomního nervového systému – sympathicus et parasymphaticus**

# Rozdíly mezi sympatikem a parasympatikem:

ncl.intermediolateralis  
(C8- L3)



VM jádra HN (III., VII., IX., X.)

ncl.intermediolateralis  
(S2-5)

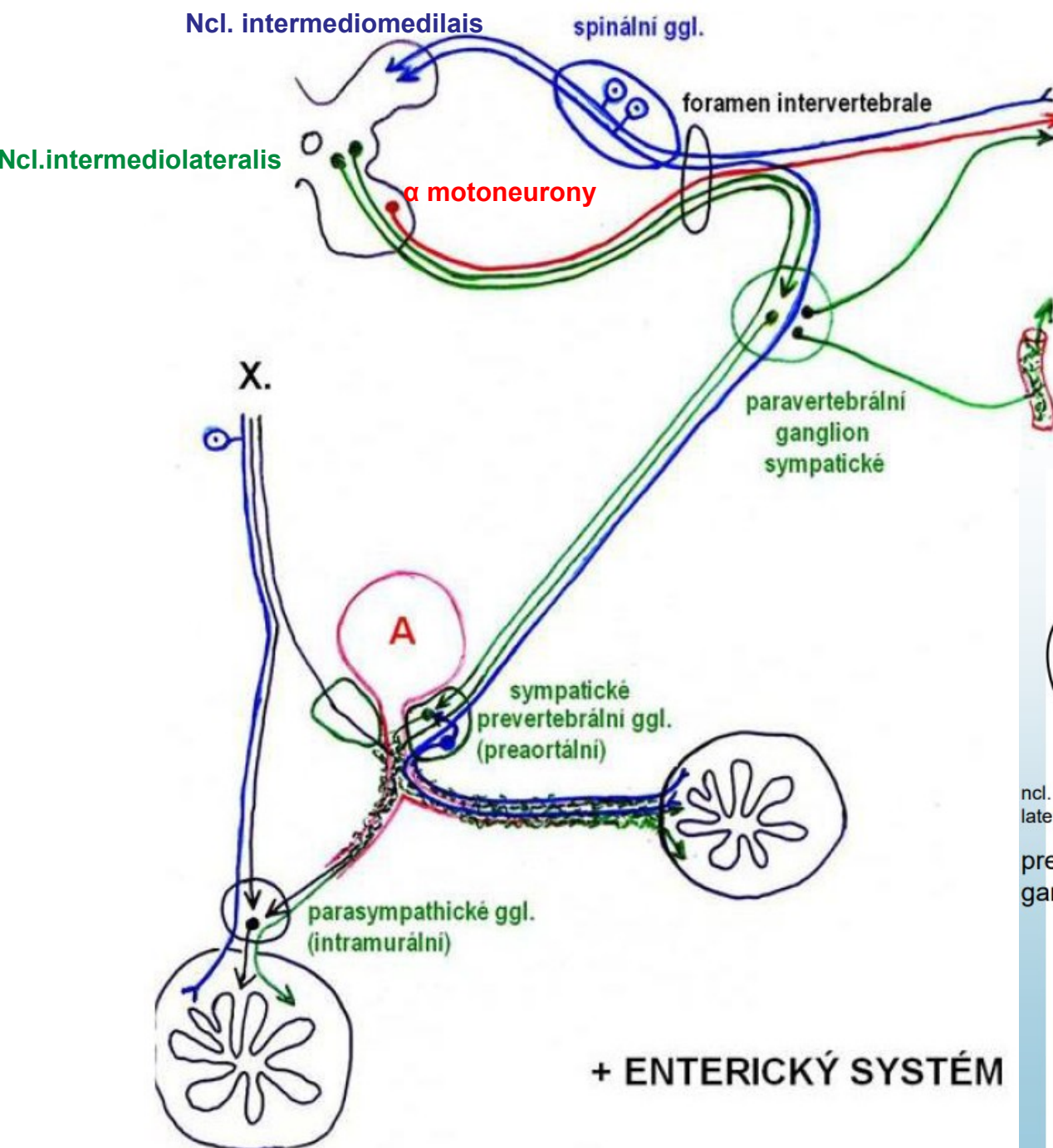
Sy

Psy

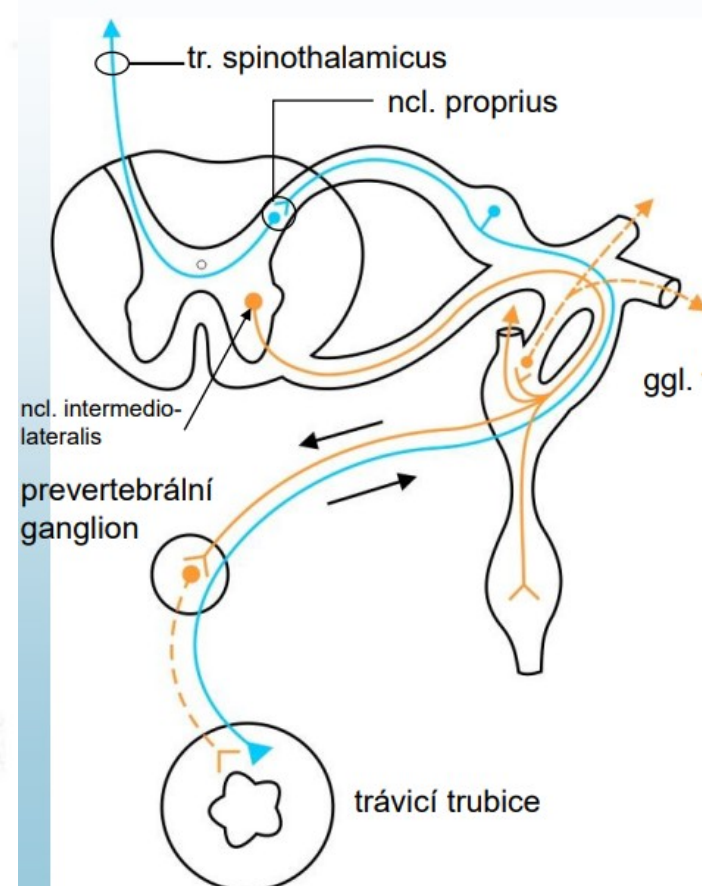
thoracolumbální X kraniosakrální  
 autonomní ganglia daleko X blízko cílovému orgánu  
 mediátor v cílovém orgánu noradrenalin X acetylcholin

	<b>SYMPATHICUS</b>	<b>PARASYMPATHICUS</b>
SRDCE		
VĚNČITÉ TEPNY		
TEPNY		
BRONCHY		
GIT		
MOČOVÝ MĚCHÝŘ		
GENITÁL		
PUPILLA		
SLINNÉ ŽLÁZY		
POTNÍ ŽLÁZY		

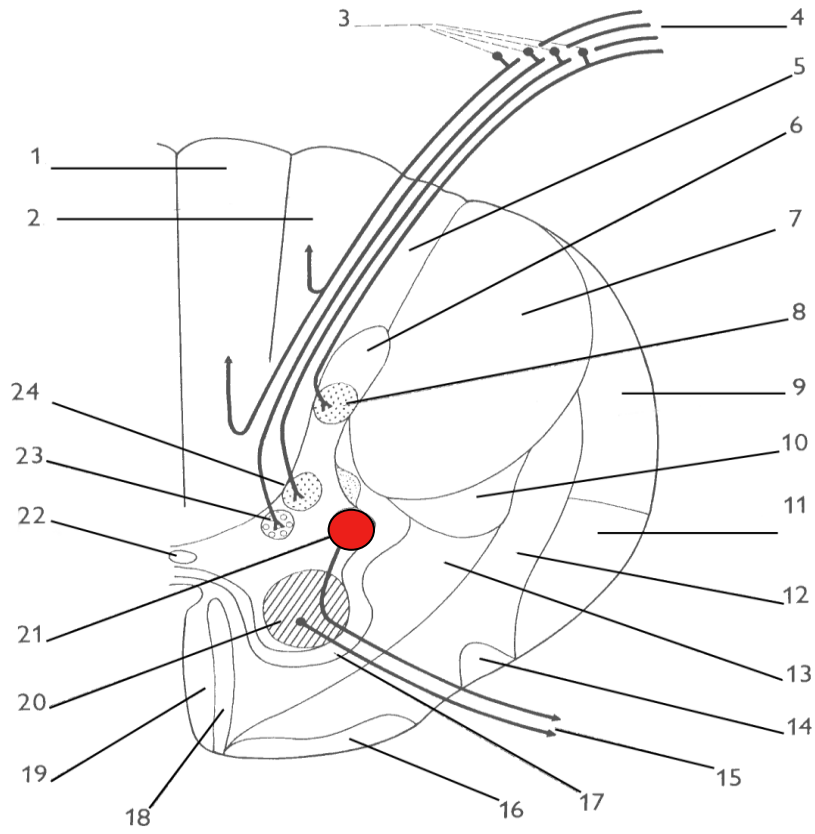




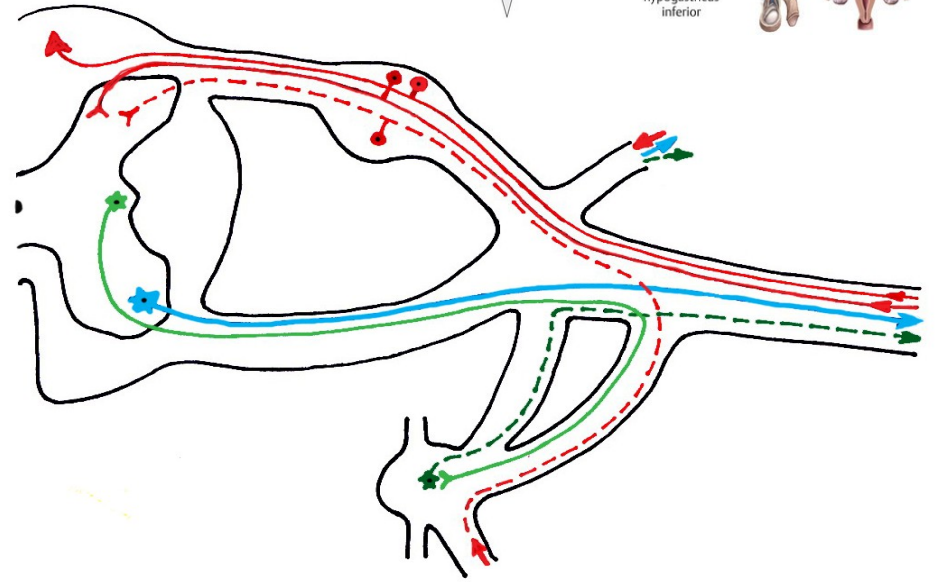
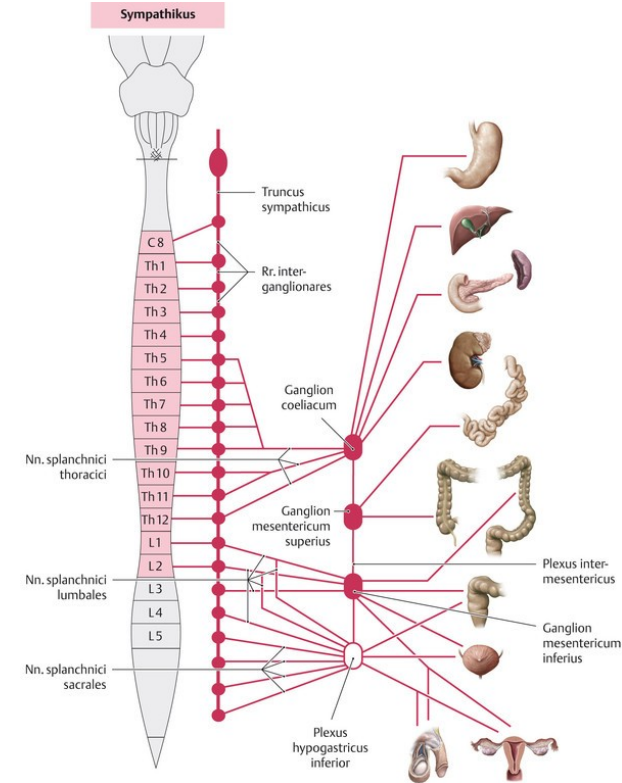
**Nervus spinalis**  
**VISCEROSENZORIKA**  
**VISCEROMOTORIKA**  
**MOTORIKA**



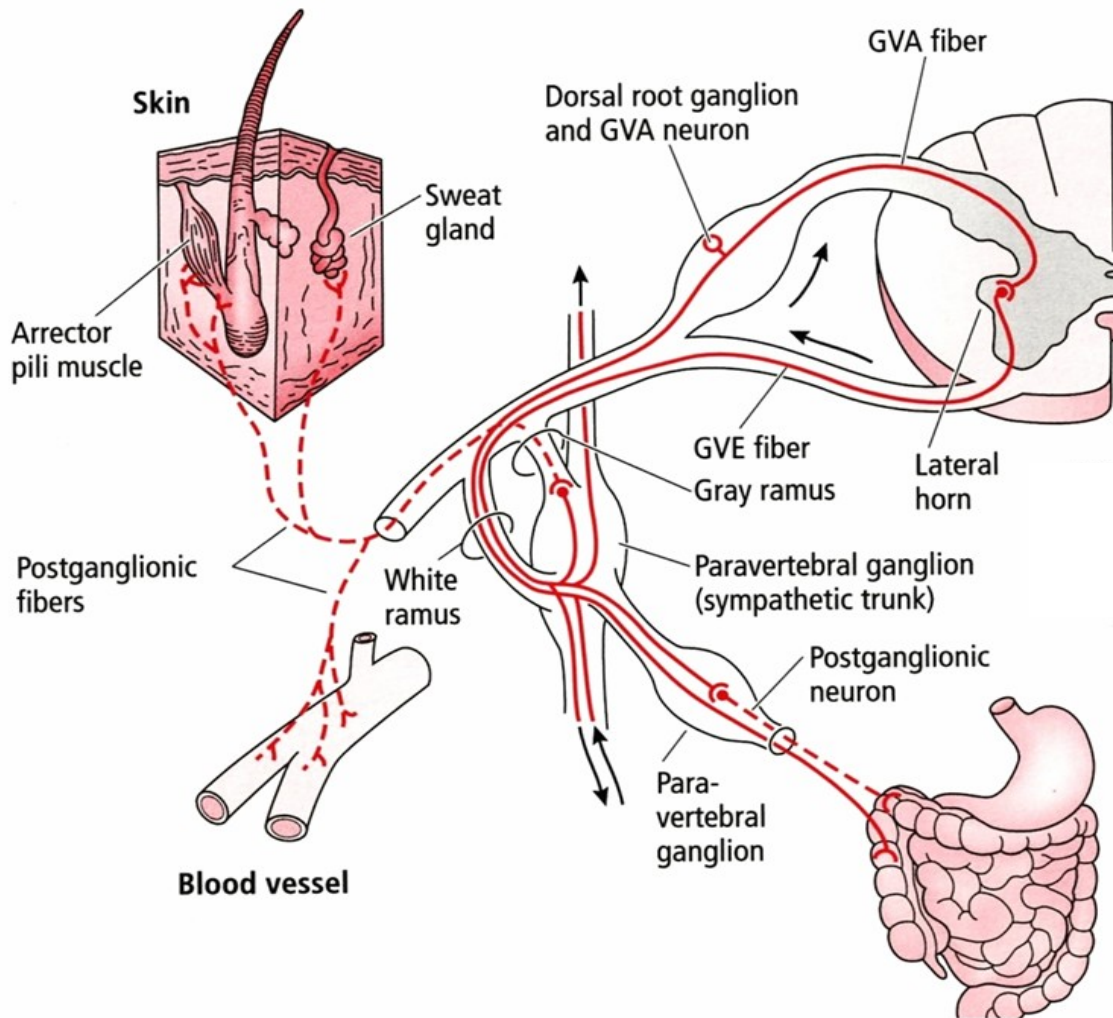
# SYMPATICUS - system (cervico)-thoraco-lumbar



**Ncl. intermediolateralis  
(C<sub>8</sub> - L<sub>2</sub>)**



# GANGLION TRUNCI SYMPATICI – eferent fibres



## To the organs:

**rr. viscerales**  
(postganglionic fibres)

**nn. splanchnici**  
(prae ganglionic fibres,  
praevertebral and intramural  
plexus)

**rr. comm. grisei**  
(to the n. spinalis - skin)

**rr. vasculares** (net around the  
arteries)



# TRUNCUS SYMPATICUS

## ganglia trunci sympatici (paravertebral)

cervicalia 3 (sup., med., inf.)

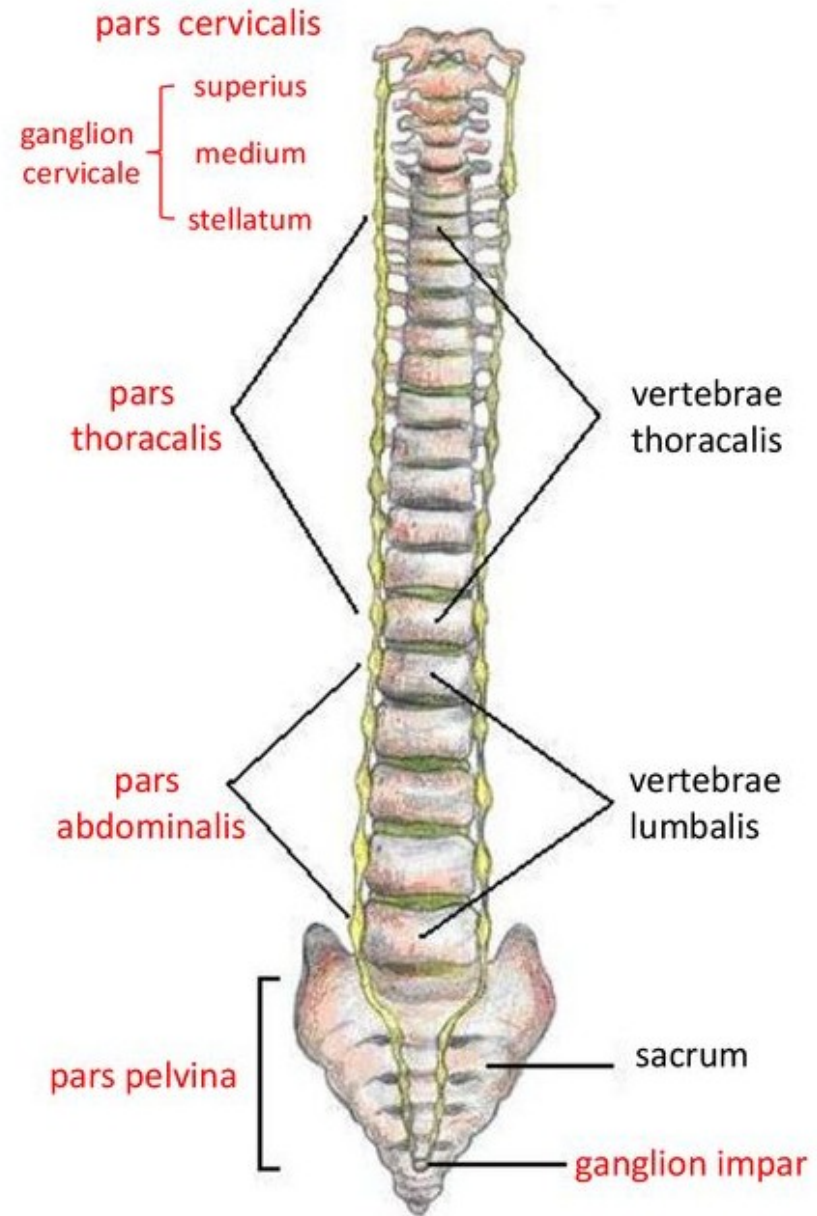
thoracica 10-11

lumbalia 4-5

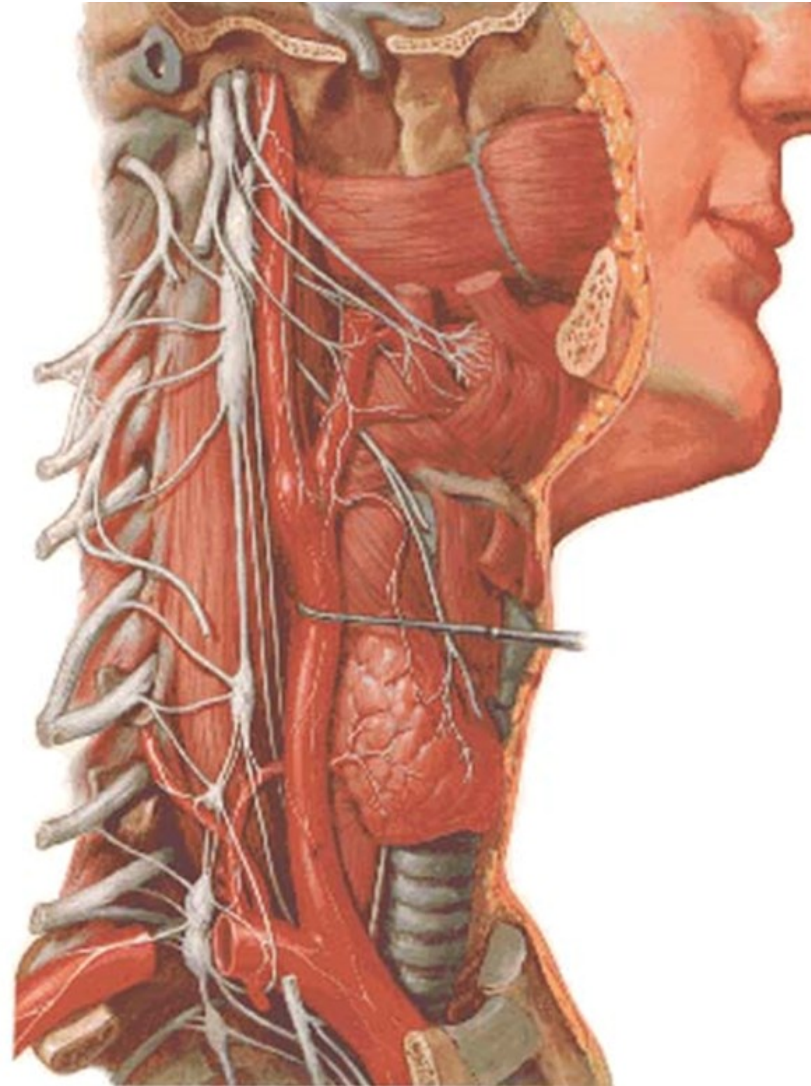
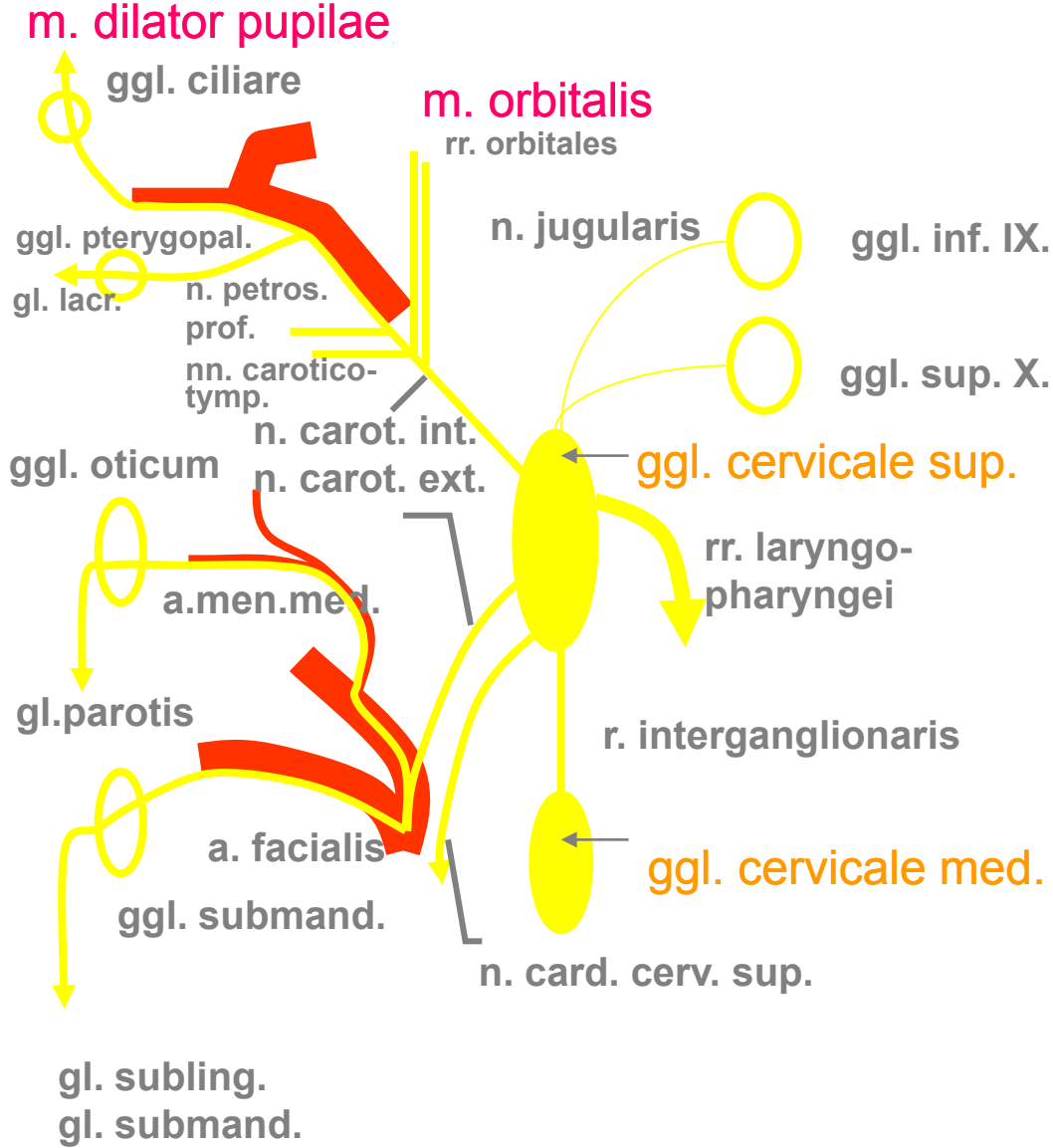
sacralia 4-5

ganglion impar

rami interganglionares

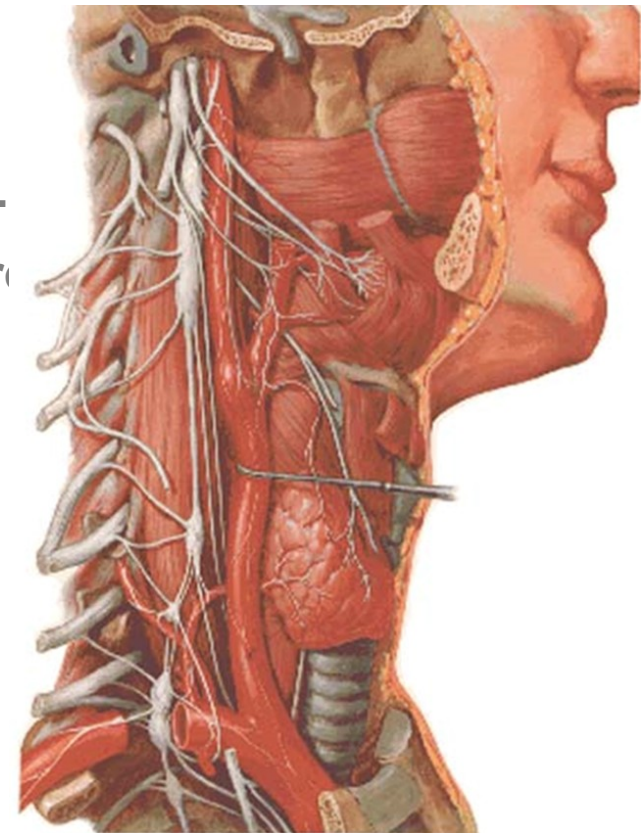
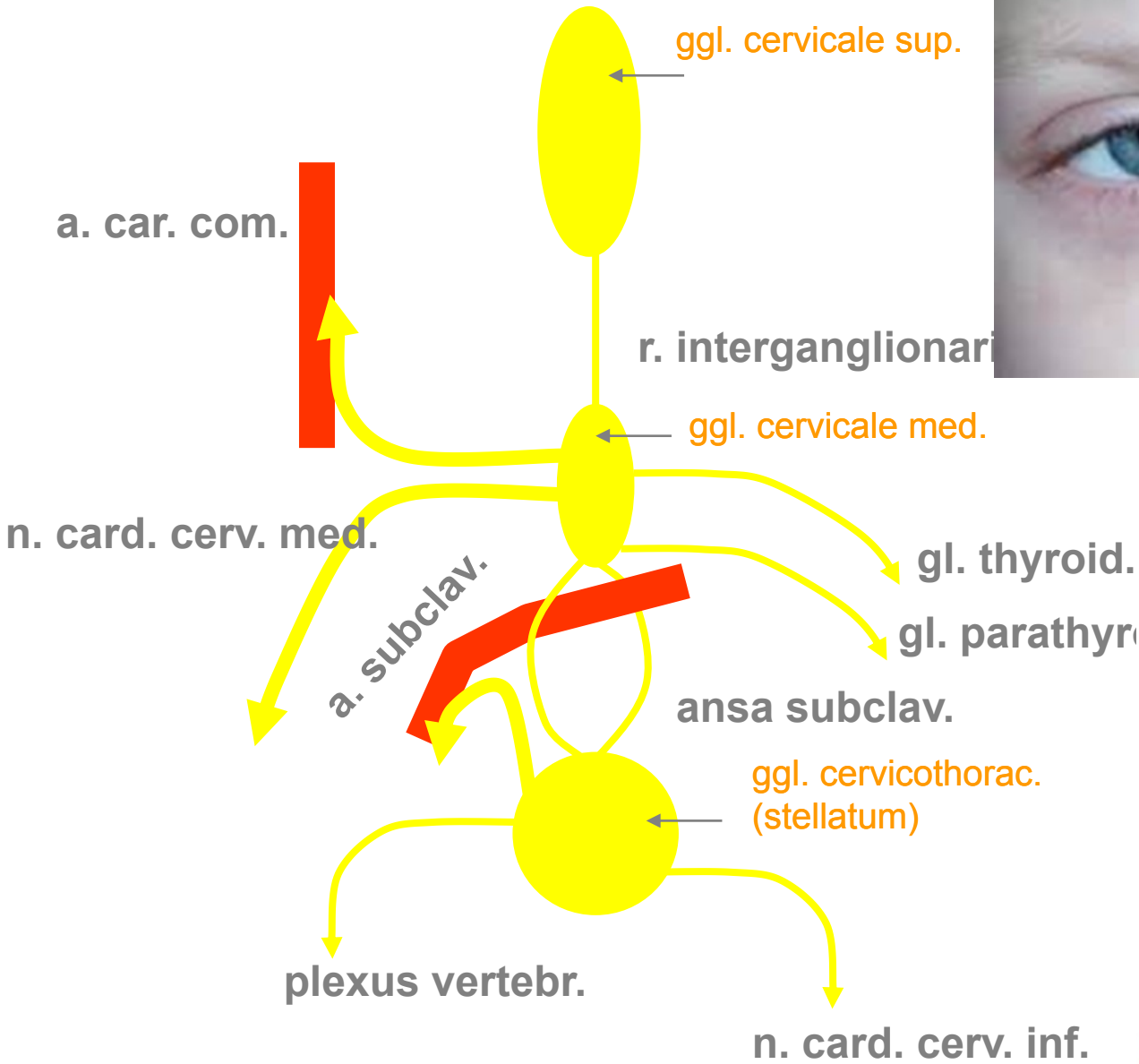


# Ggl. cervicale sup.





# Ggl. cervicale med. et stellatum



# Ganglia thoracica

Th1 paravertebrální ganglia

rr. vasculares  
- u všech

Th6

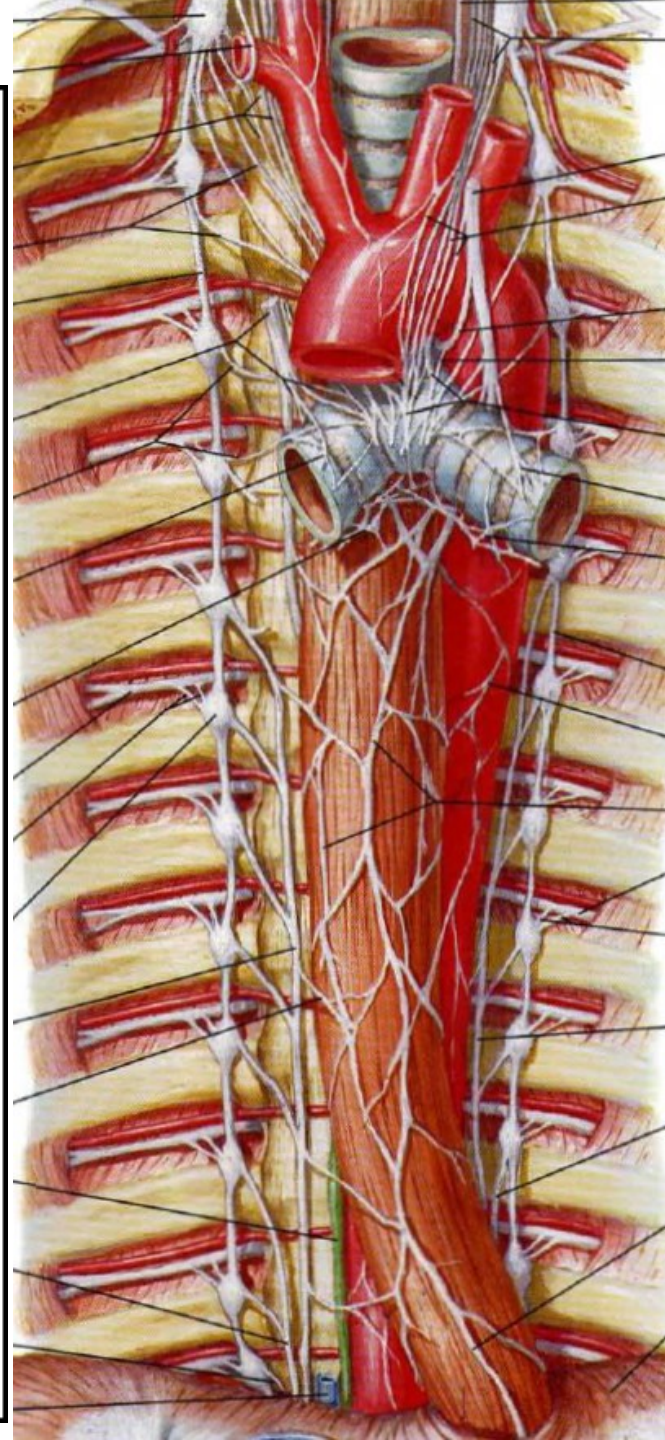
Th9

n. splanchnicus  
major

ggl. coeliacum  
(prevertebrální)

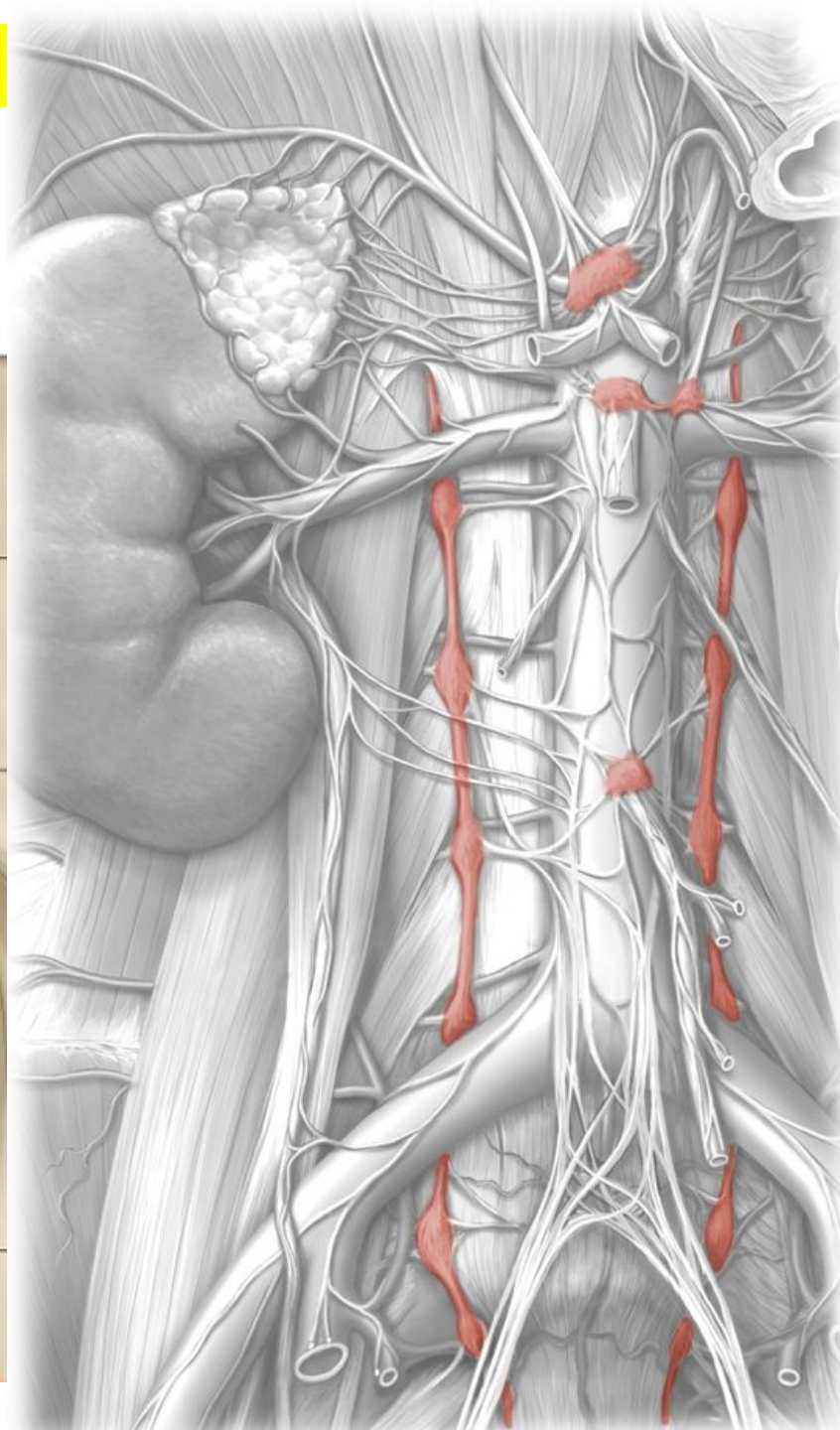
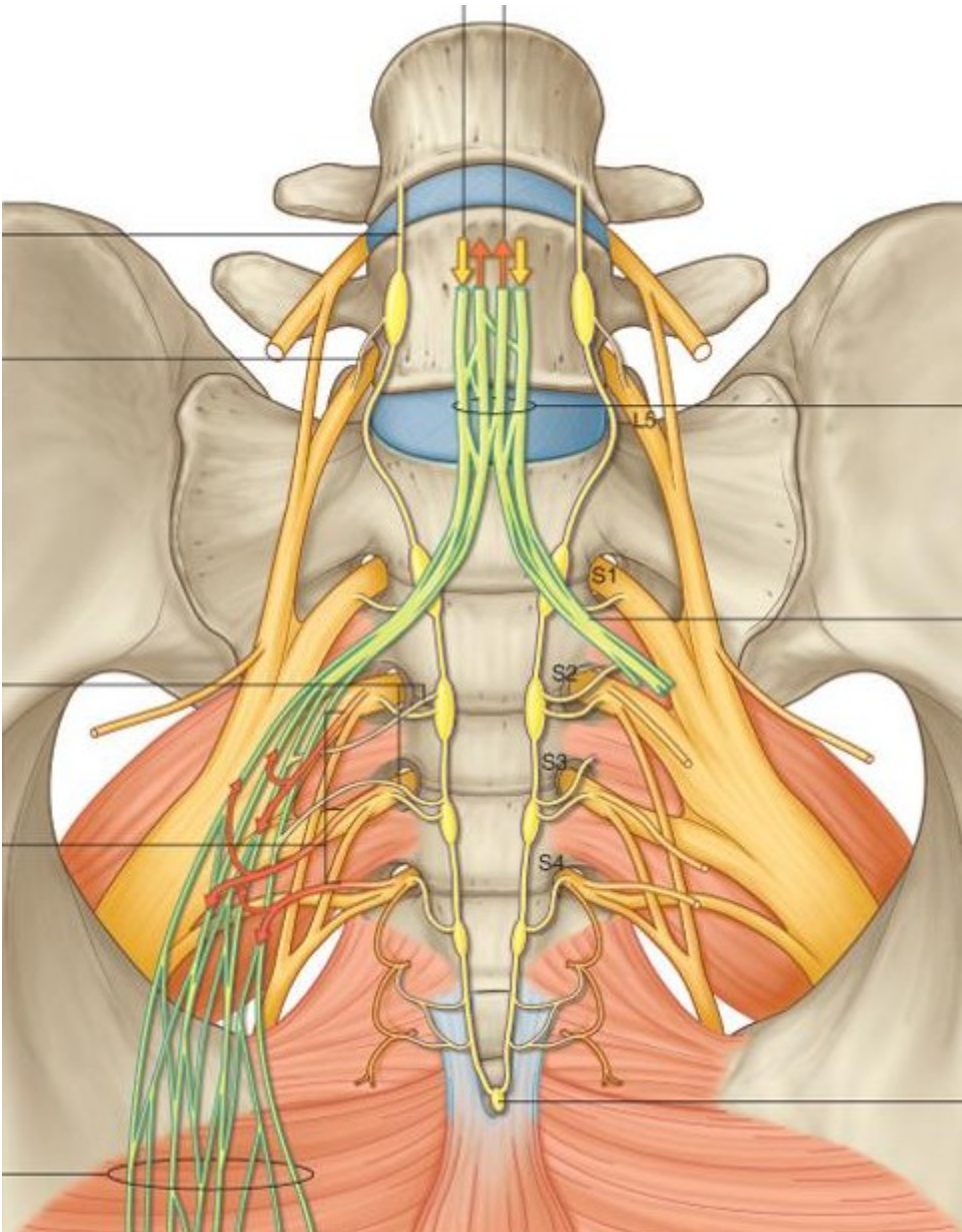
n. splanchnicus  
minor

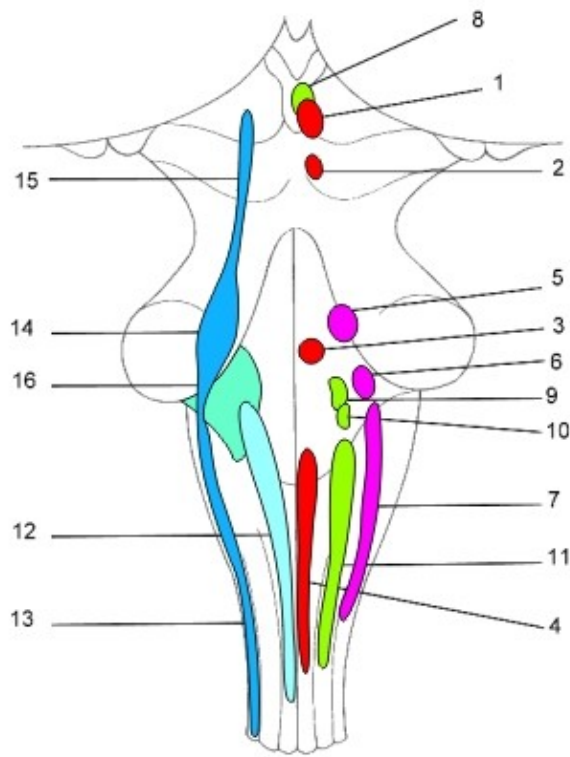
n. splanchnicus  
imus (1/3)





# Ganglia lumbalia et sacralia + ggl.impar





# PARASYMPATICUS (cranio-sacral system)

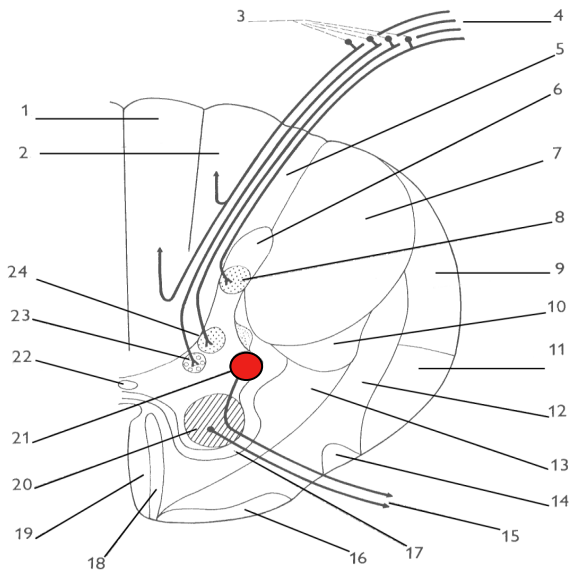
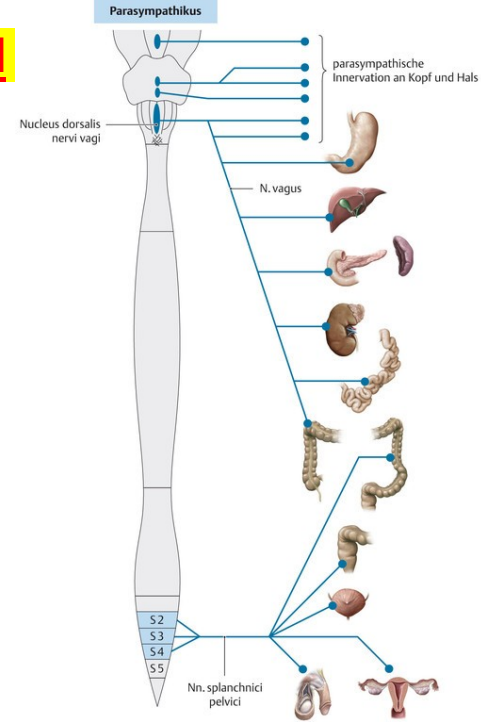
**Ncl. parasympaticus n. III**  
(ggl. ciliare)

**Ncl. parasympaticus n. VII**  
(ggl. pterygopalatinum, ggl.submandibulare)

**Ncl. parasympaticus n. IX**  
(ggl. oticum)

**Ncl. parasympaticus n. X**  
(organs of neck, thorax, abdominal – until flexura coli sinistra!!!, genital glands)

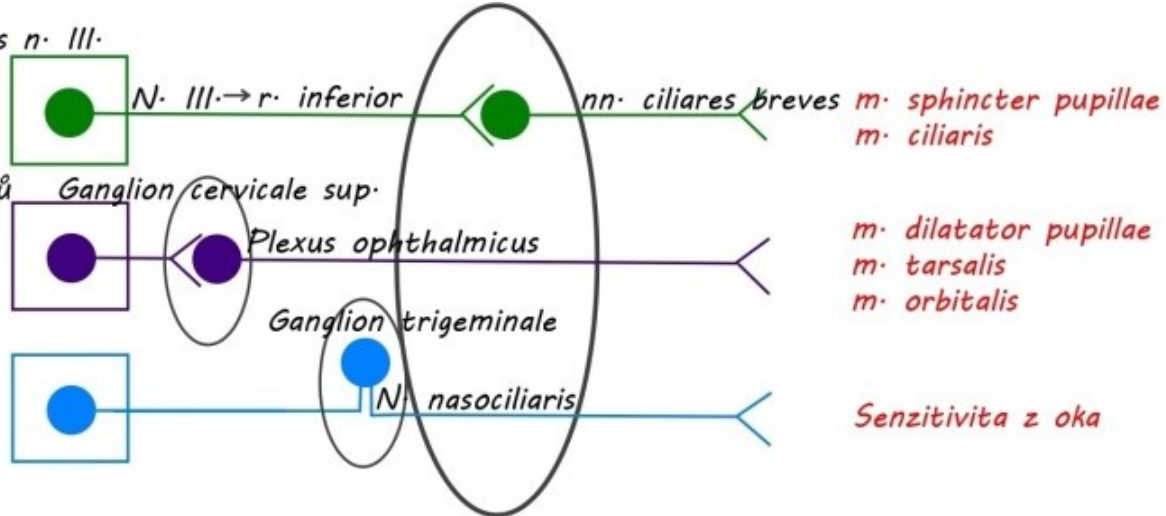
**Sacral segments of spinal cord (S2-4), ncl. intermediolateralis**  
(organs of pelvis except of genital glands)



Ncl. Edinger-Westphal = ncl. accessorius n. III.

Ncl. intermediolateralis postr. miš. rohů segmentů C8 až Th1

Ncl. spinalis et pontinus n. trigemini

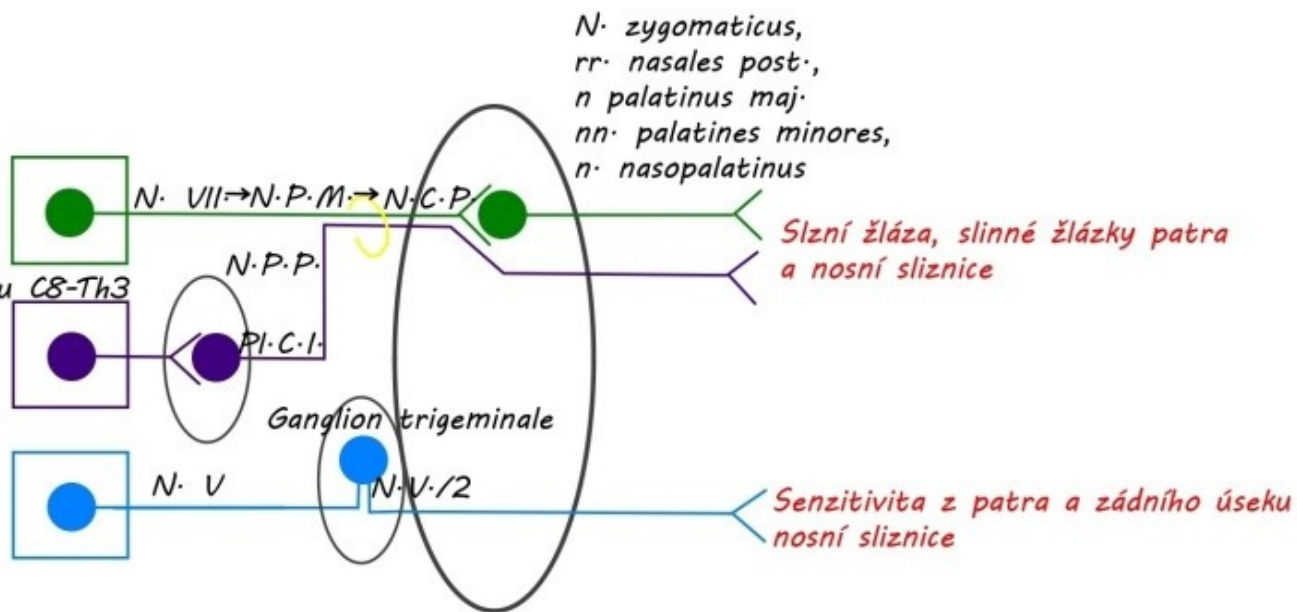


Ganglion ciliare

Ncl. salivatorius sup.

Ncl. intermediolateralis postr. miš. rohu C8-Th3

Ncl. spinalis et pontinus n. trigemini



Ganglion pterygopalatinum

N.P.M. = Nervus palatinus major

N.C.P. = Nervus canalis pterygoidei

N.P.P. = Nervus petrosus profundus

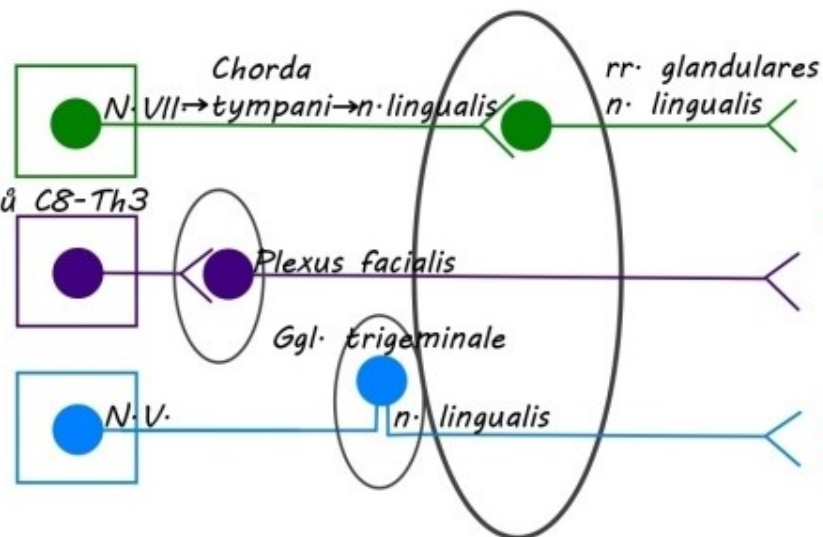
Pl.C.I. = Plexus caroticus internus



*Ncl. salivatorius sup.*

*Ncl. intermediolateralis postr. miš. rohů C8-Th3*

*Ncl. spinalis et pontinus n. trigemini*



*Glandula submandibularis et sublingualis, glandulae linguales*

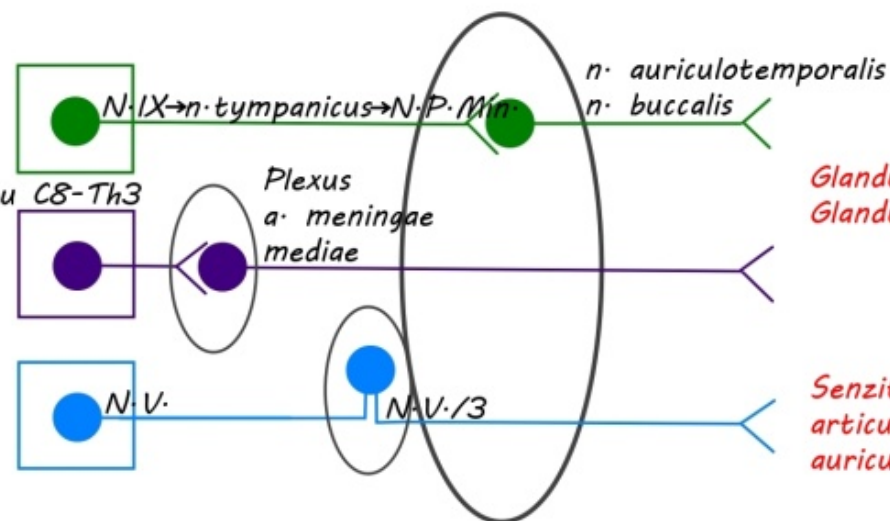
*Senzitivita z apex et corpus linguae*

*Ganglion submandibulare*

*Ncl. salivatorius inf.*

*Ncl. intermediolateralis postr. miš. rohu C8-Th3*

*Ncl. spinalis et pontinus n. trigemini*



*Glandula parotis  
Glandulae buccales*

*Senzitivita z buccae,  
articulatio temporomandibularis,  
auriculae, meatus acusticus ext.*

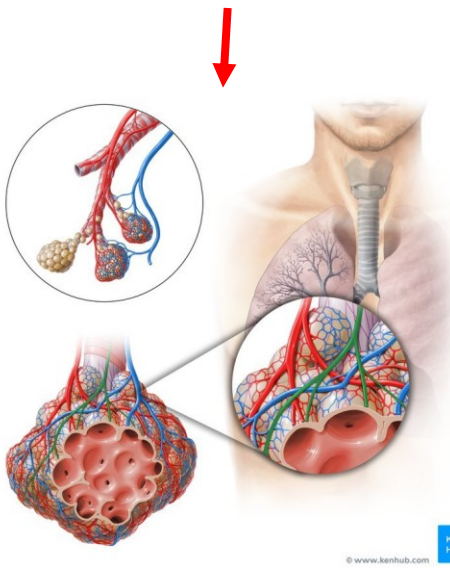
*Ganglion oticum*

*N. P. Min. = Nervus petrosus minor*

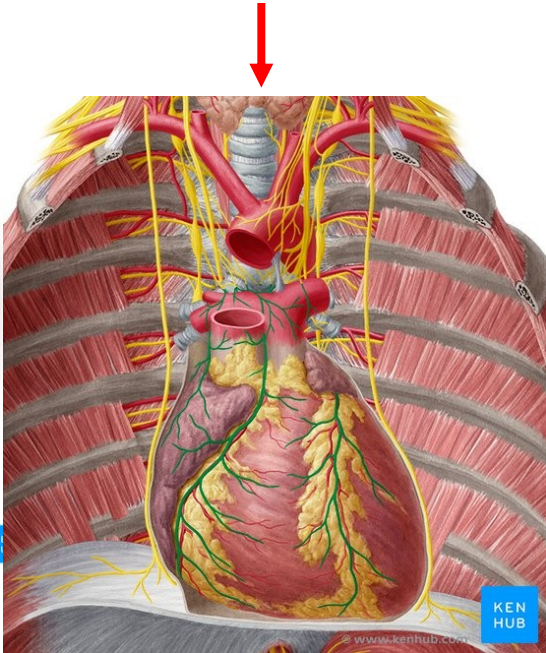
*Jacobsonova anastomóza = odstup parasympatických vláken z plexus tympanicus cestou n. petrosus minor*

# PRAEVERTEBRAL PLEXUSES – THORACIC CAVITY

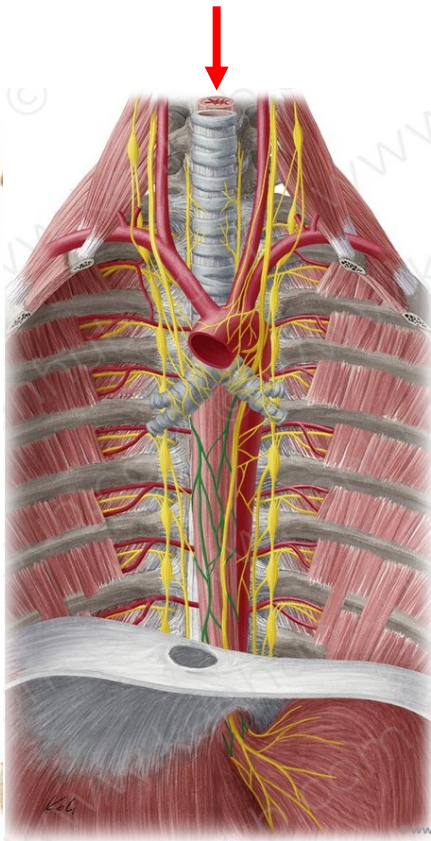
**Plexus pulmonalis**



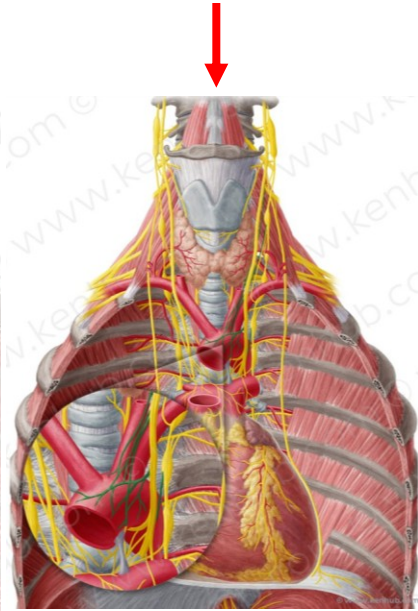
**Plexus cardiacus spf., prof.**



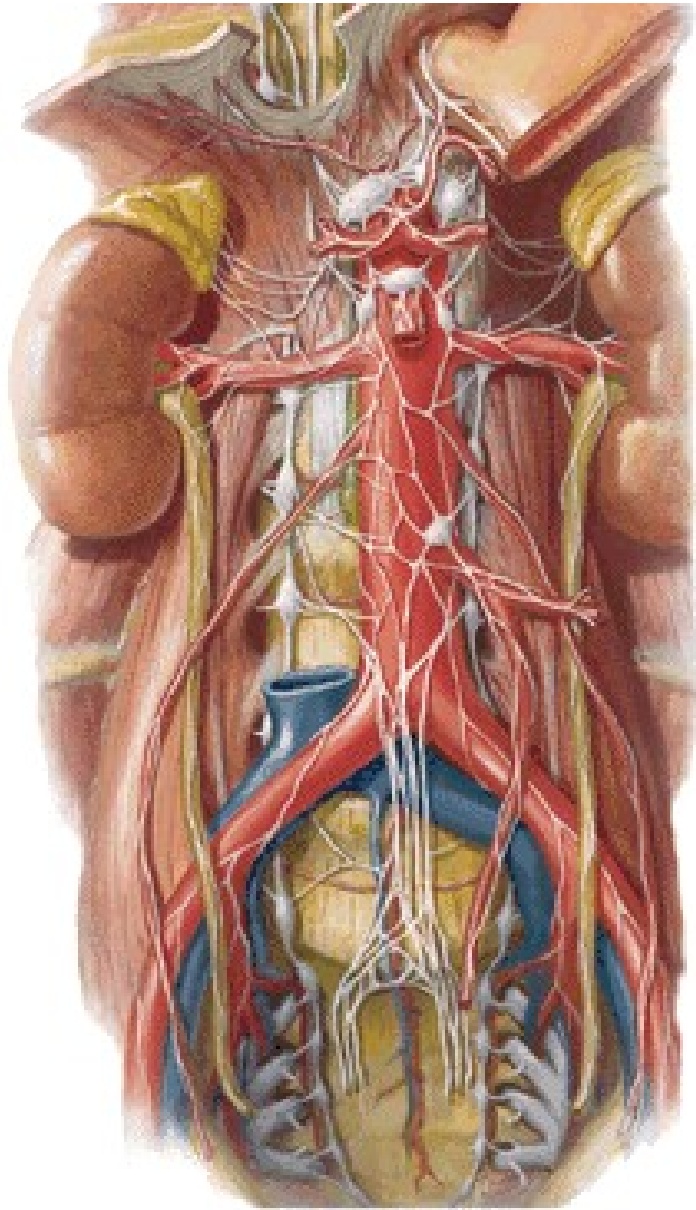
**Plexus oesophageus**



**Plexus aorticus thoracicus**



# PRAEVERTEBRAL PLEXUSES – ABDOMINAL CAVITY



## Plexus aorticus abdominalis

### Plexus coeliacus

(ggl coeliacum dx. sin.)

plexus gastrici

plexus lienalis

plexus hepaticus

plexus duodenalis

plexus pancreaticus

### Plexus mesentericus superior

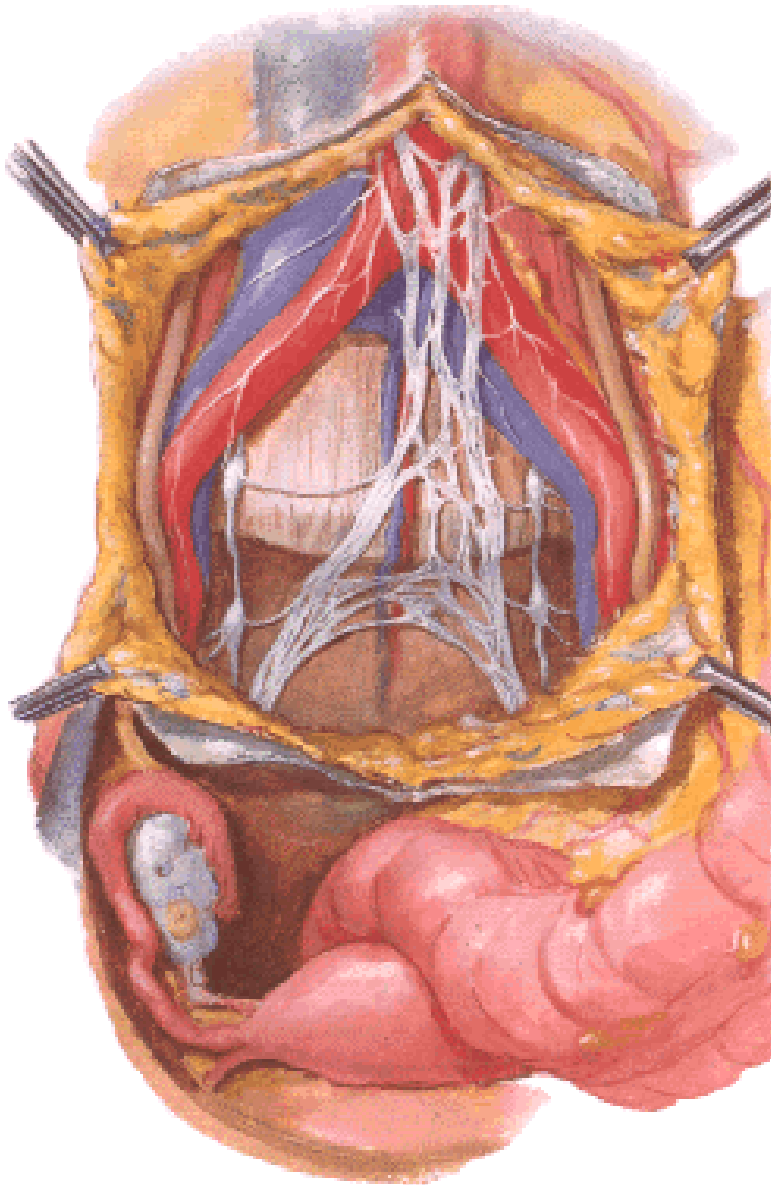
### Plexus mesentericus inferior

### Plexus renalis et suprarenalis (plexus uretericus)

### Plexus testicularis (ovaricus)

### Plexus iliaci (plexus femoralis)

# PRAEVERTEBRAL PLEXUSES – PELVIS



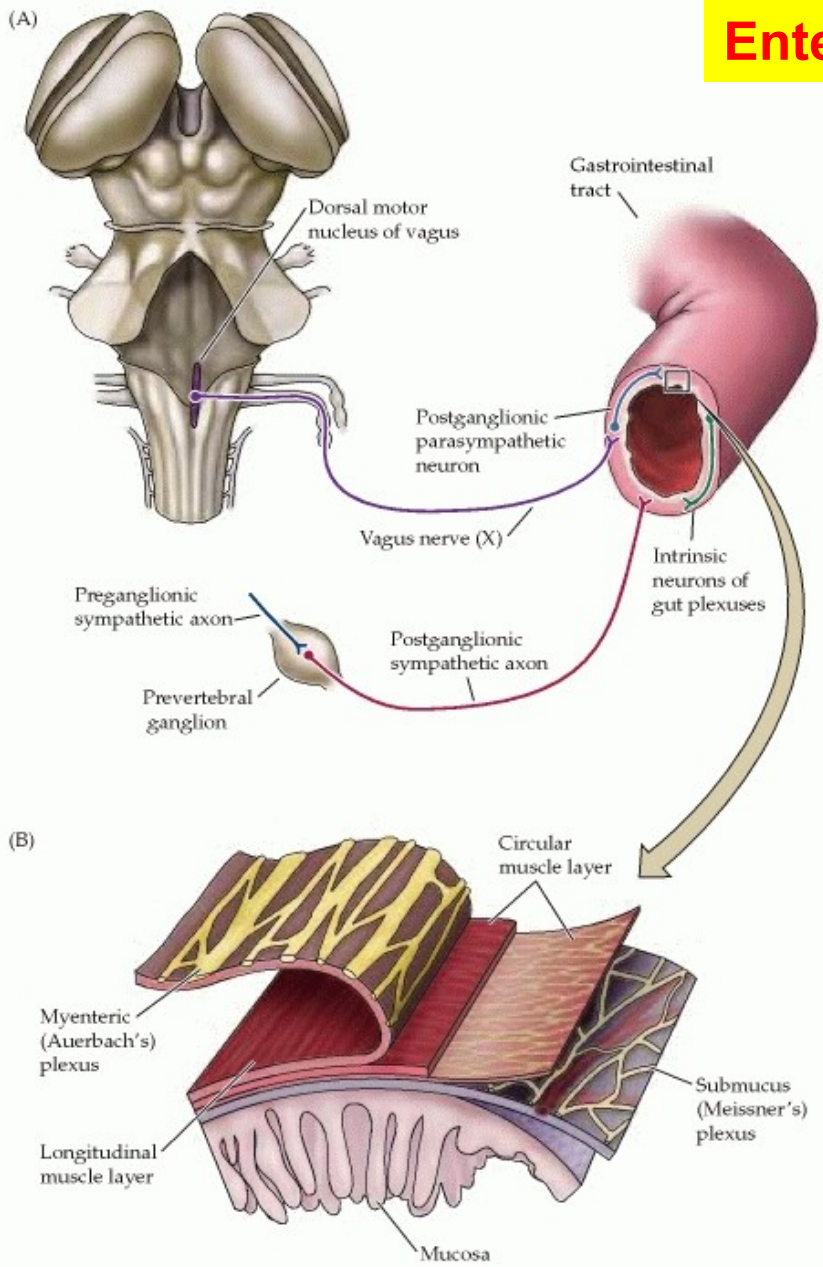
**Plexus hypogastricus superior  
(n. praesacralis)**

**Plexus hypogastricus dx. a sin.**

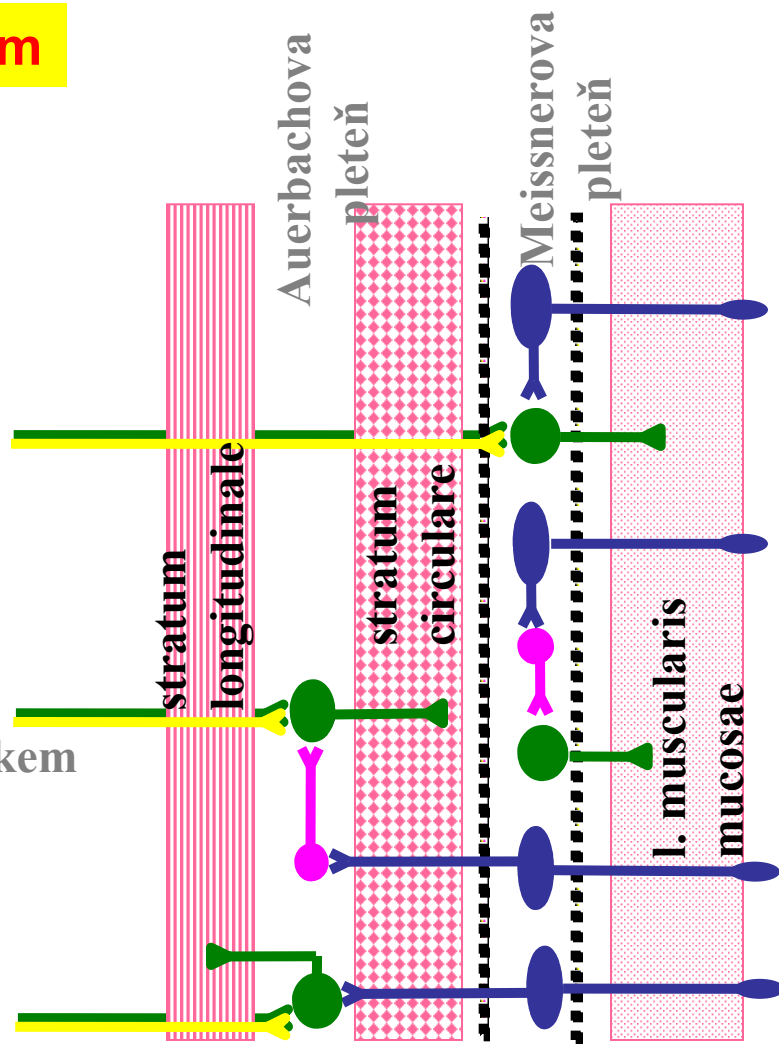
**Plexus hypogastricus inf.**



# Enterický systém



ovlivnění  
(modulace)  
symp. a  
parasympatikem



- enterický motorický neuron
- enterický interneuron
- enterický viscerosenzorický neuron

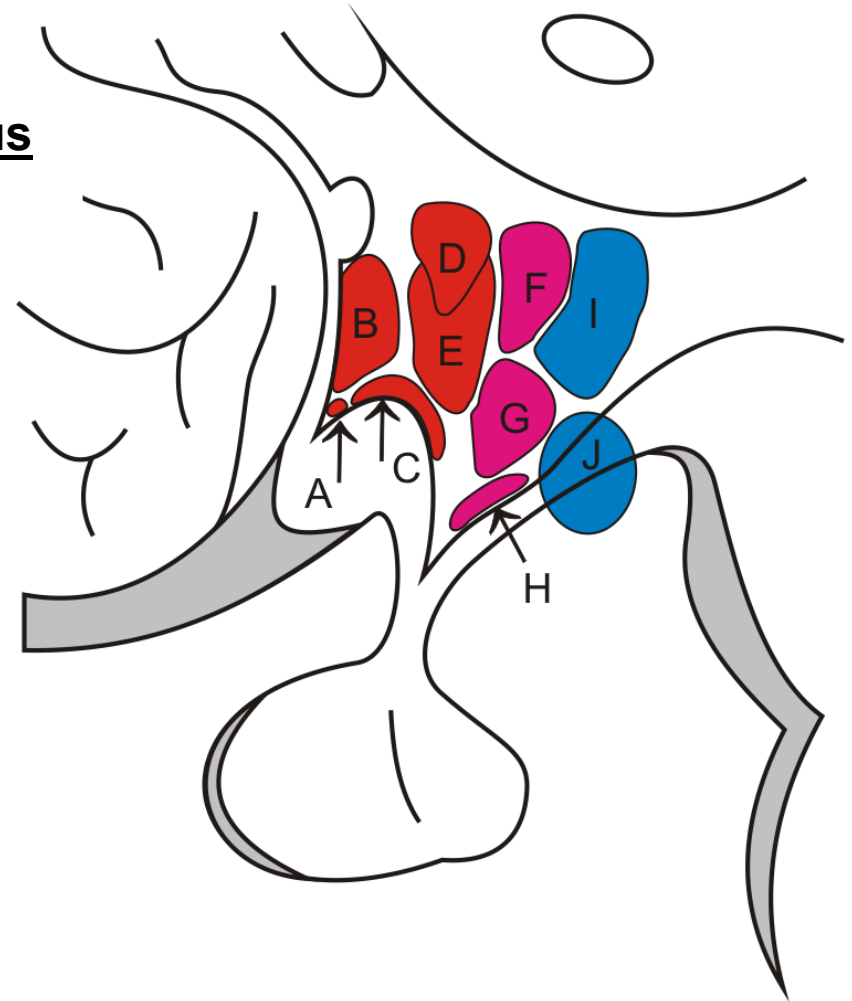


# CNS

- nejvyšší vegetativní ústředí = **hypothalamus**
- ovládáno limbickým systémem

Jádra **předního hypothalamu**  
ovlivňují **parasympaticus**  
**fasciculus longitudinalis dorsalis**

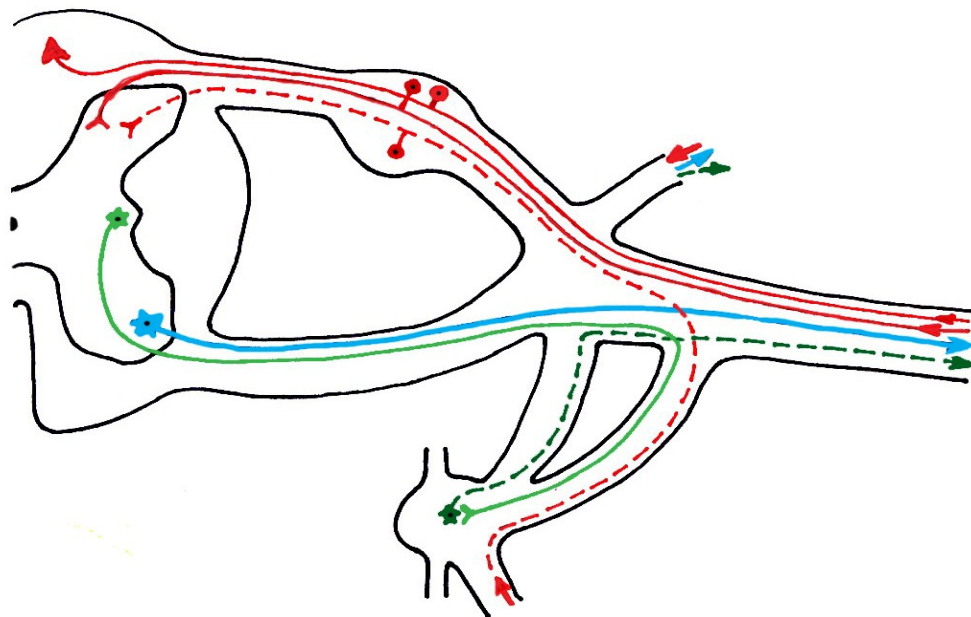
Jádra **středního hypothalamu**  
ovlivňují **sympathicus**  
**tr.tegmentalis centralis, FR**



Zadní kořen vede jak somatosenzoriku,



tak i viscerosenzoriku



**Při vedení bolesti z útroeb tak může dojít k jevu, kdy impulzy z orgánů jsou (na úrovni spinálního ganglia nebo míchy) převedeny na neurony vedoucí vjemy z kůže, což vede k přecitlivělosti daného okrsku kůže na dotek. Tyto okrsky, typické pro jednotlivé vnitřní orgány se nazývají**

**HEADOVY zóny.**

# HAEDOVY ZONY

**Srdce a oblouk aorty-** Th1-Th8- vlevo

**Plíce a průdušky-** Th3-Th5-Th9-  
oboustranně

**Žaludek-** Th5-Th9- vlevo

**Dvanáctník, játra, žlučník-** Th6-Th9-  
vpravo

**Slezina-** Th6-Th7- vlevo

**Slinivka břišní-** Th8-Th9- vlevo

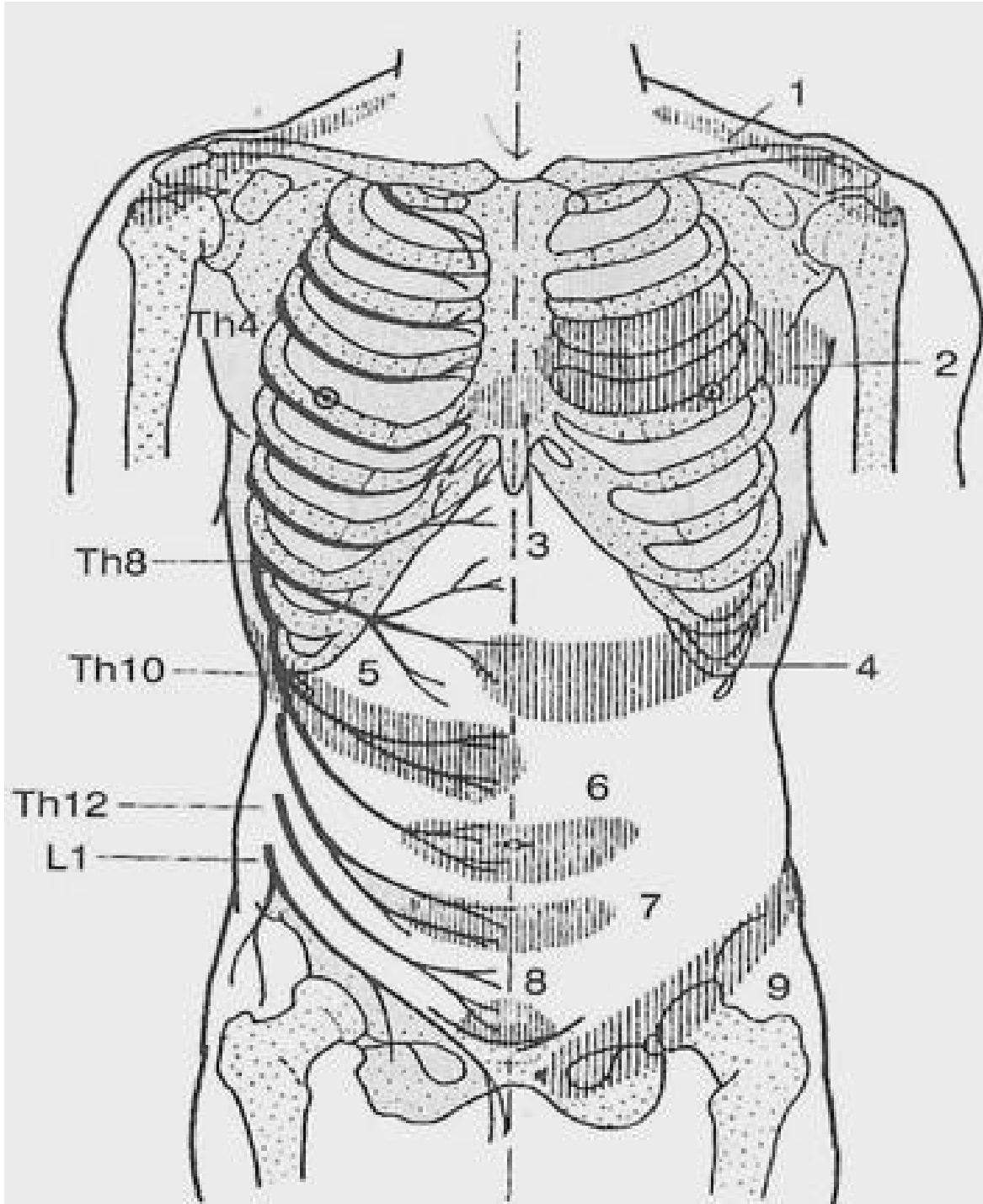
**Slepé střevo, vzestupný tračník-** Th10-  
L1- vpravo

**Příčný, sestupný tračník-** Th11-Th12-  
vlevo

**Sigmovitý tračník, konečník-** L1-L2-  
vlevo

**Ledviny, močový měchýř, močovody-**  
Th10-L3-S3- oboustranně

**Pohlavní orgány-** Th11-L3-S3-  
oboustranně



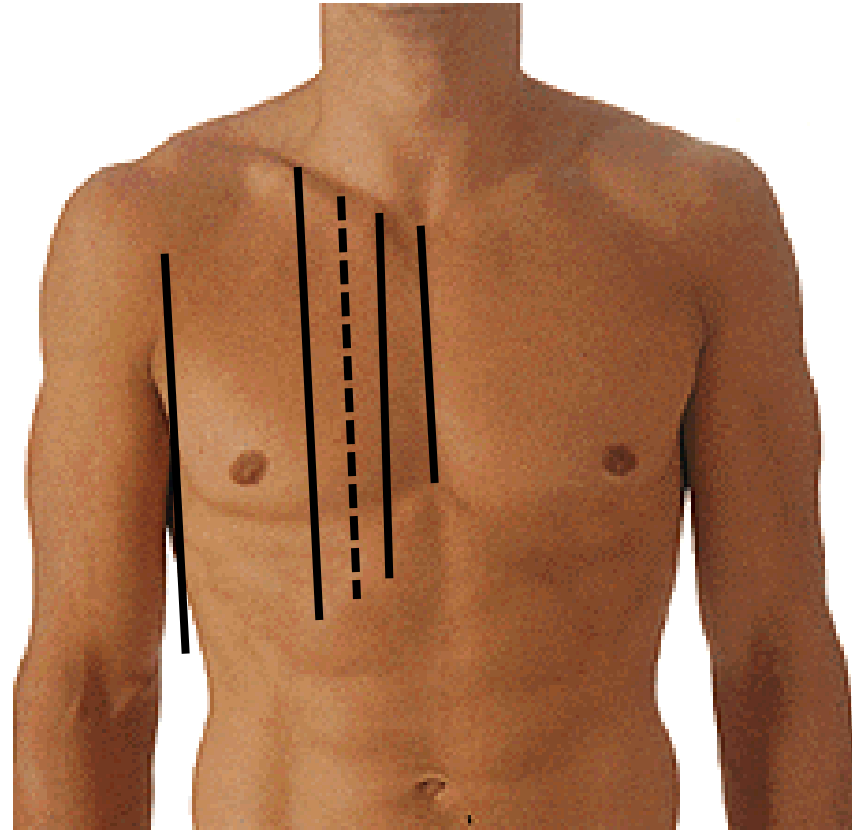
# Endokrinní žlázy

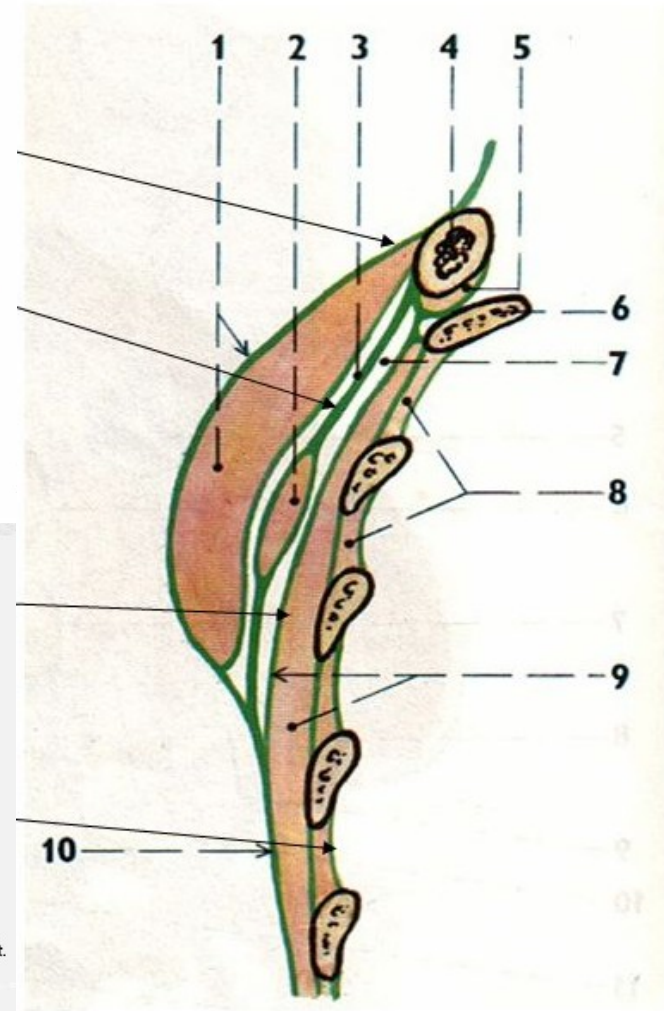
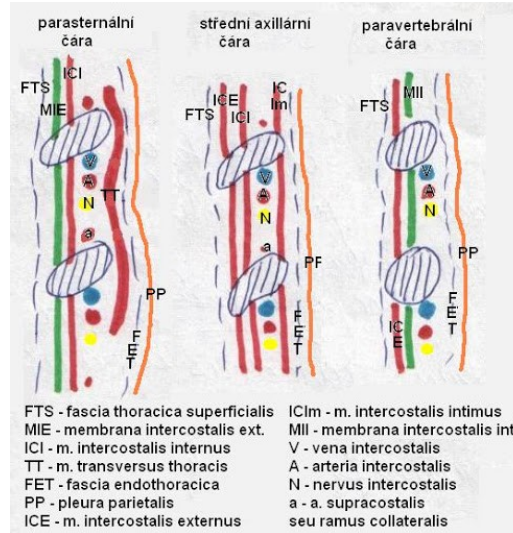
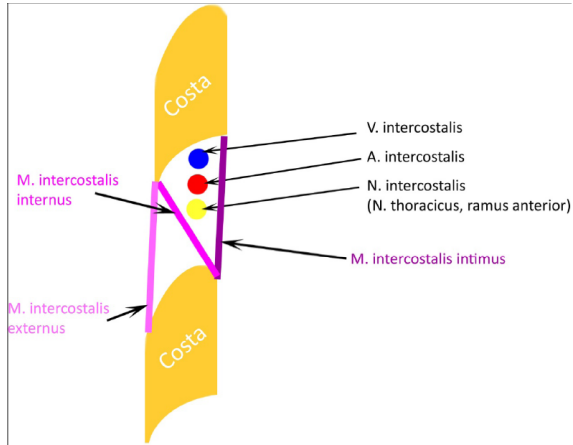
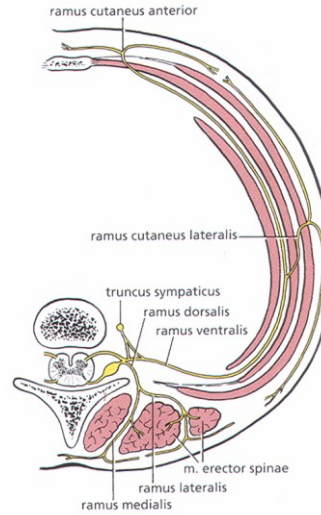
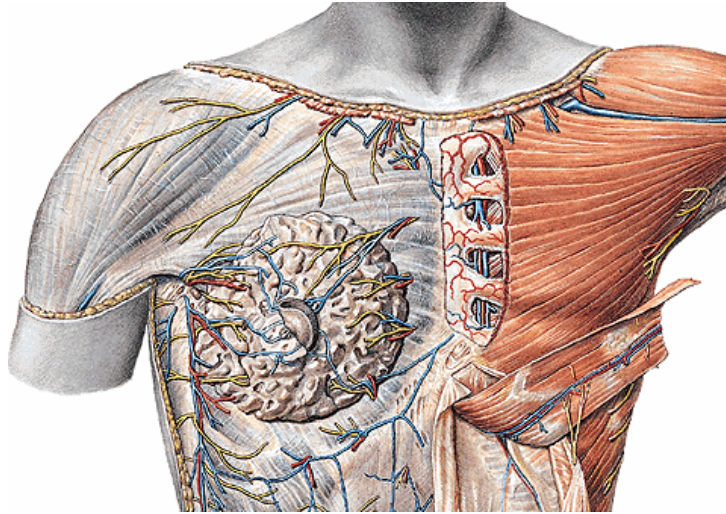


25. Stavba stěny hrudní
26. Reg. mammalis
27. Orientační čáry na hrudníku
28. Perikard 29. Mediastinum superius
30. Mediastinum posterius
31. Mediastinum anterius et medium
32. Rozdělení krajin břicha (orientační čáry)
33. Stavba stěny břišní
34. Projekce orgánů na přední stěnu břišní
35. Reg. umbilicalis
36. Canalis inguinalis
37. Supramezokolická část dutiny peritoneální
38. Inframezokolická část dutiny peritoneální
39. Retroperitoneální prostor
40. Peritoneum – duplikatury
41. Peritoneum – recesy
42. Povrchová a vnitřní hranice malé a velké pánve
43. Fossa ischiorectalis
44. Reg. urogenitalis muže
45. Reg. urogenitalis ženy
46. Reg. analis
47. Cavum pelvis infraperitoneale muže
48. Cavum pelvis infraperitoneale ženy

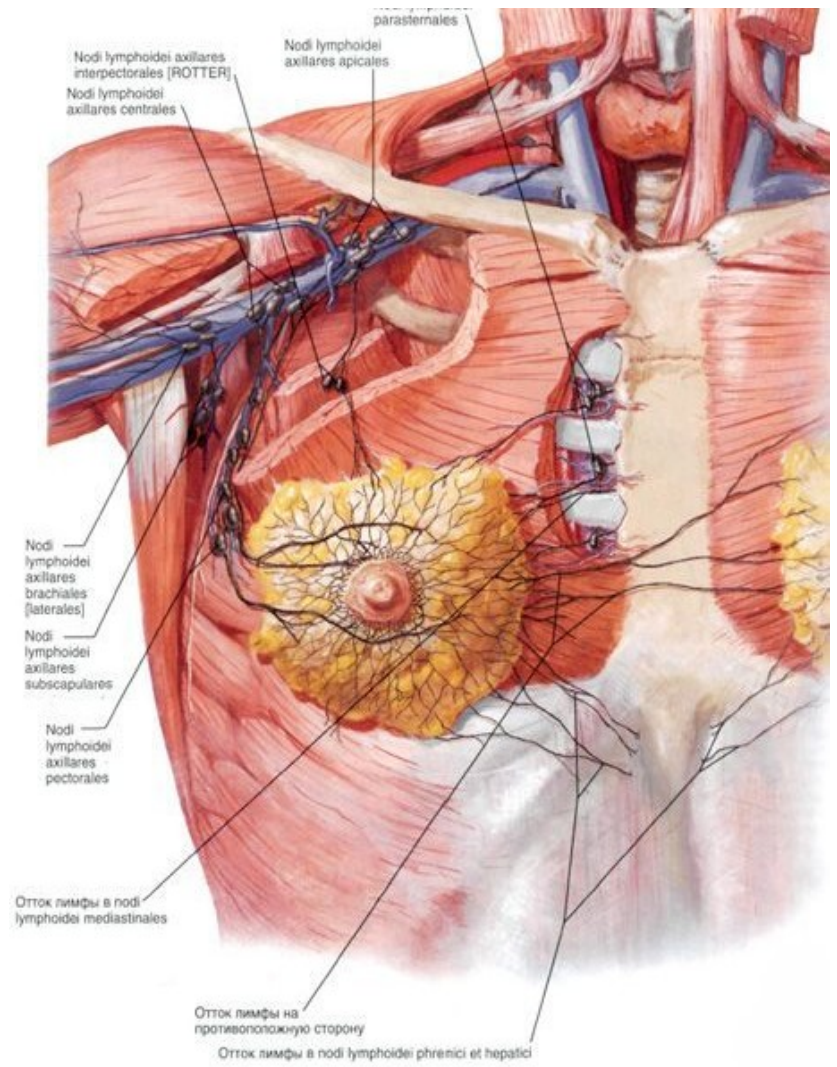
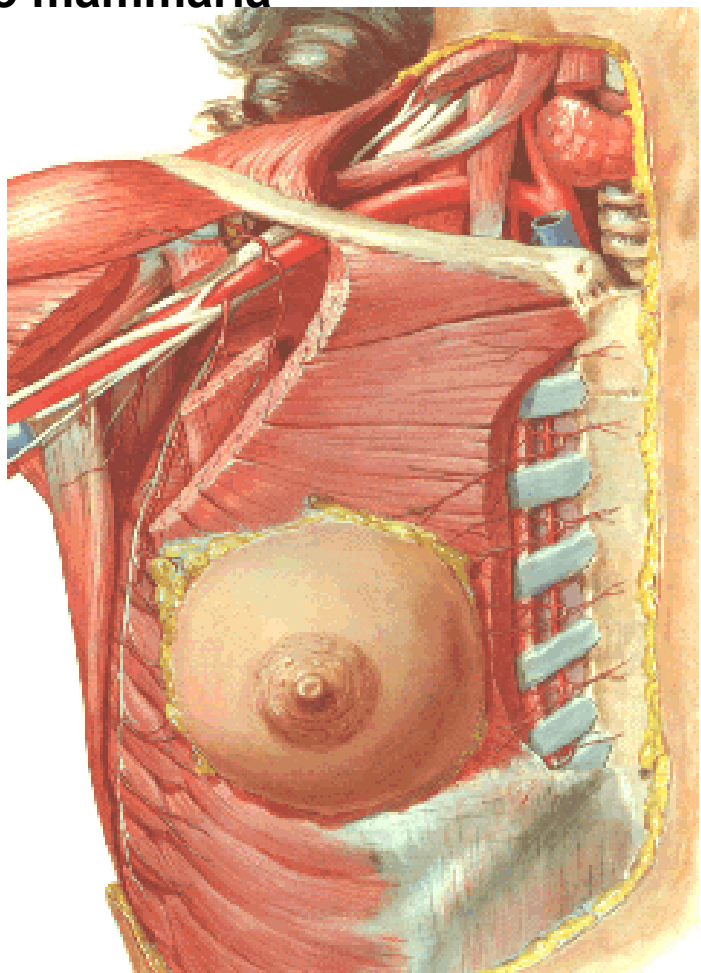


# Thorax



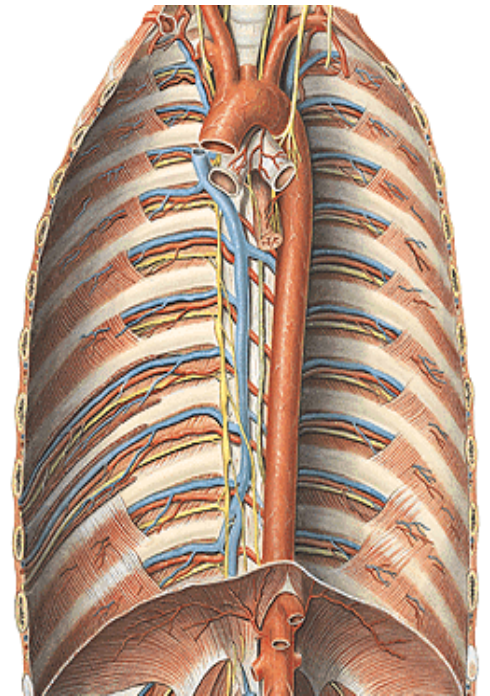
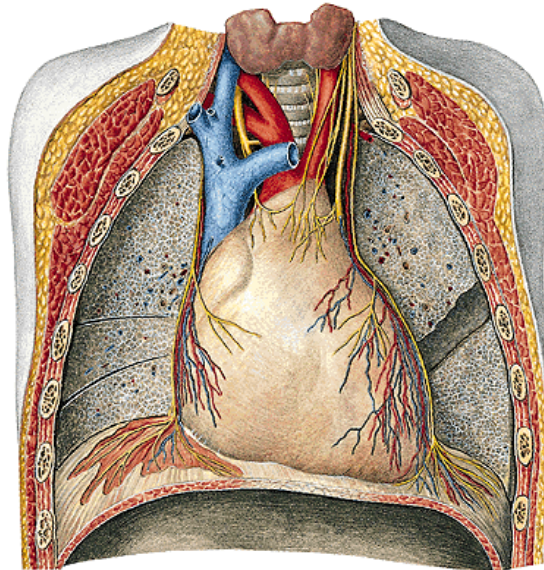
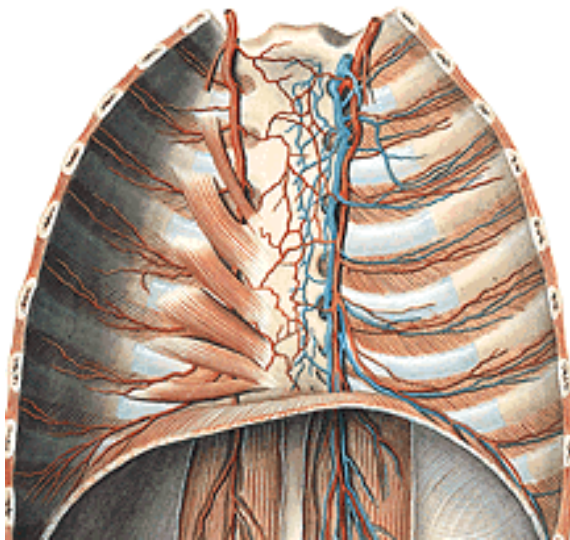
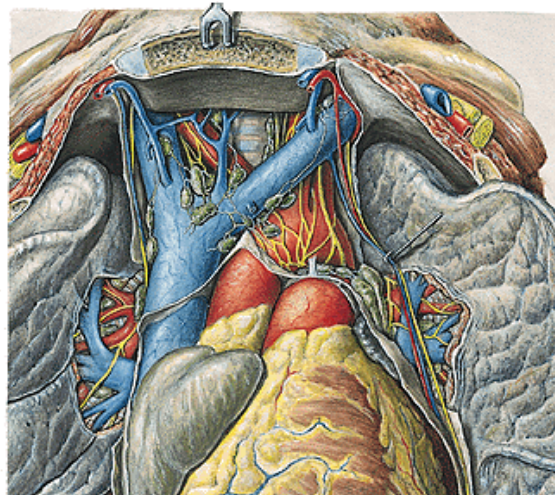
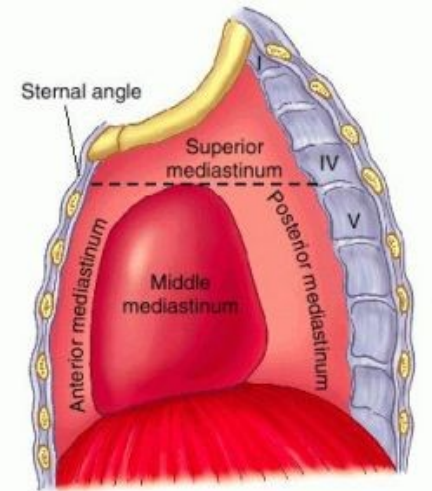


# Regio mammaria

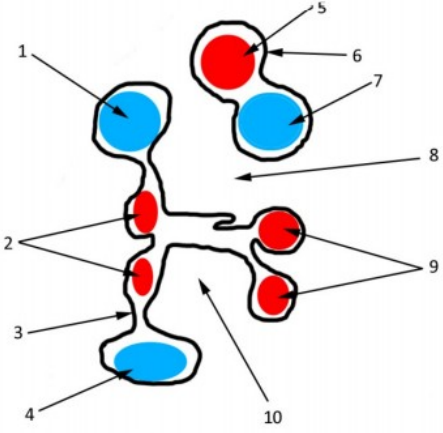
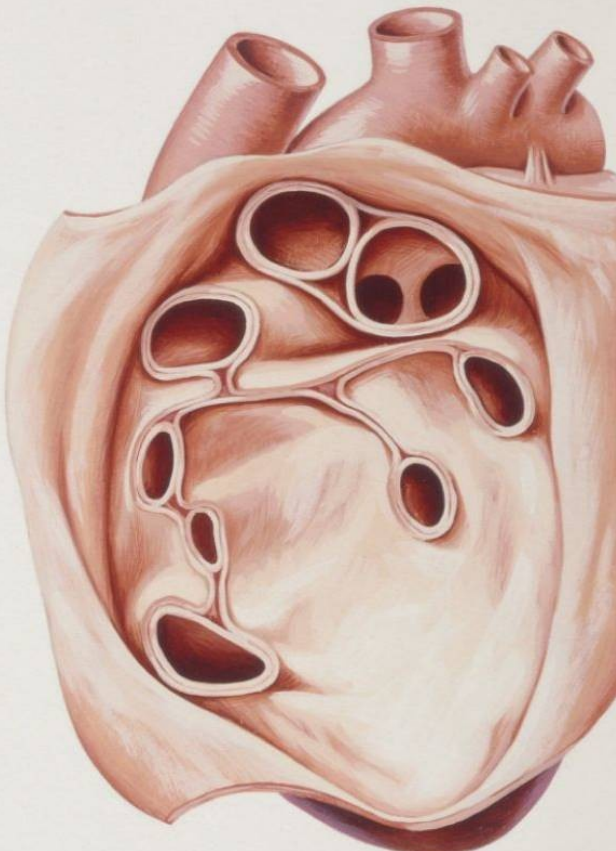
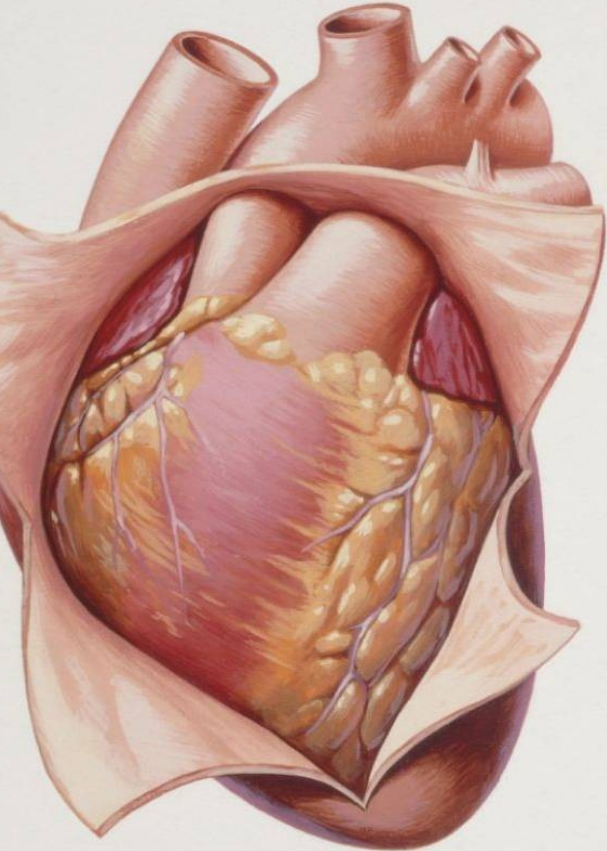




# Mediastinum

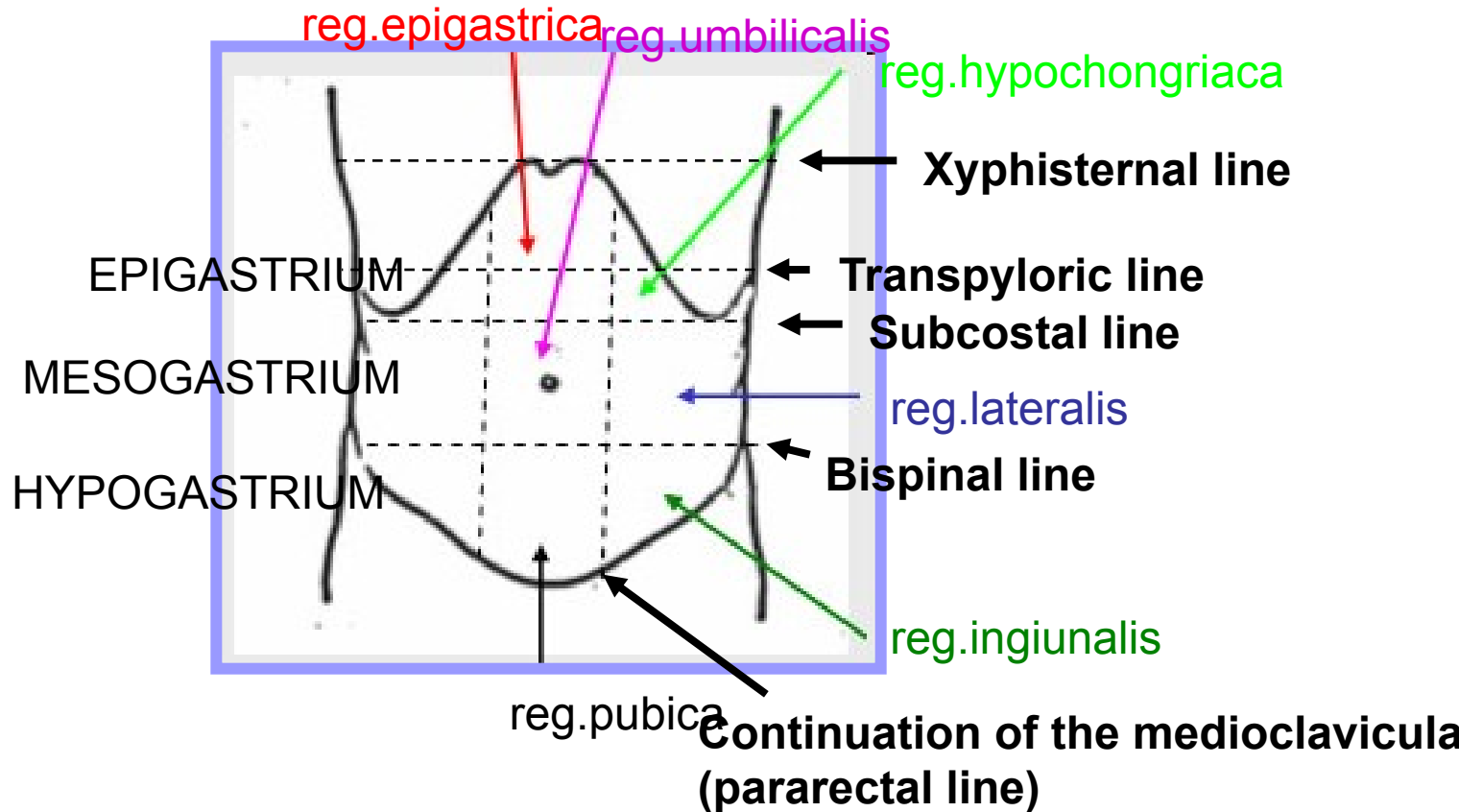


# Pericardium

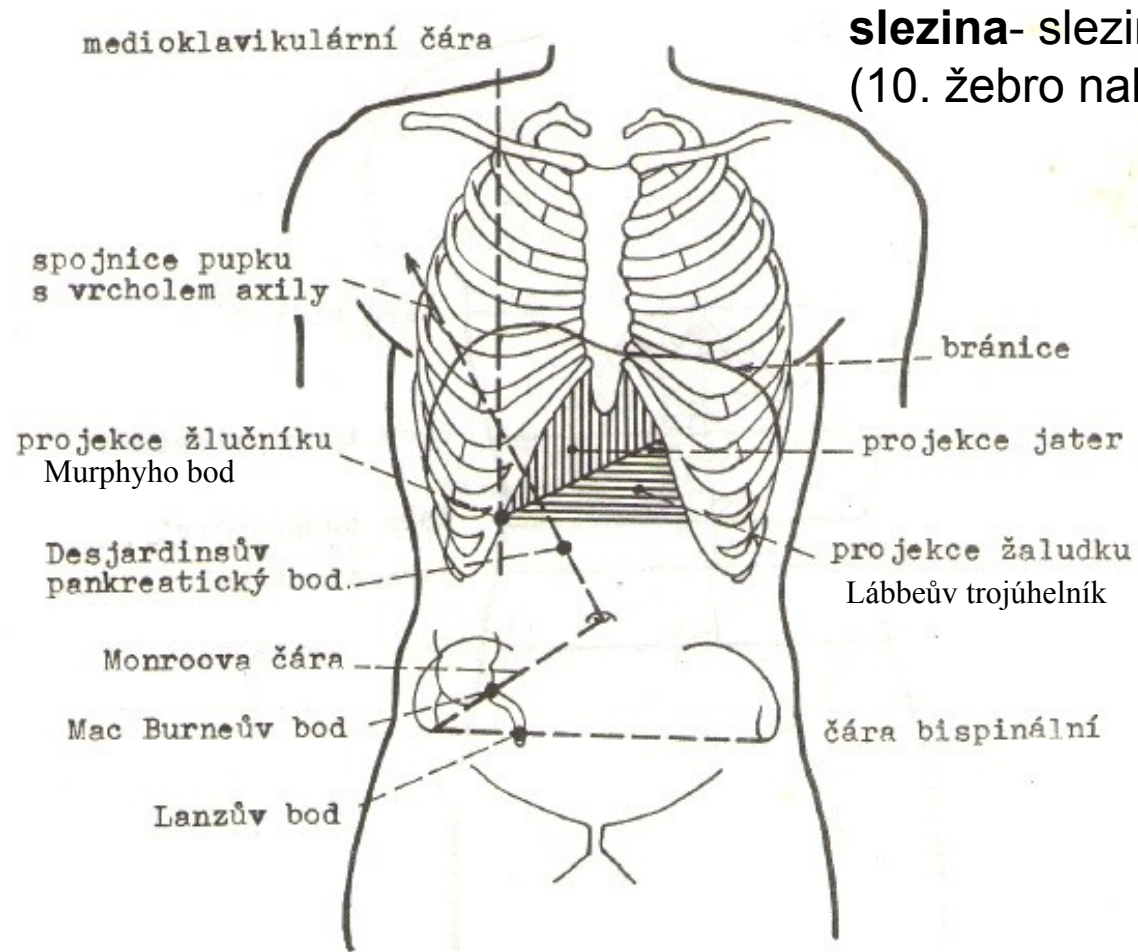




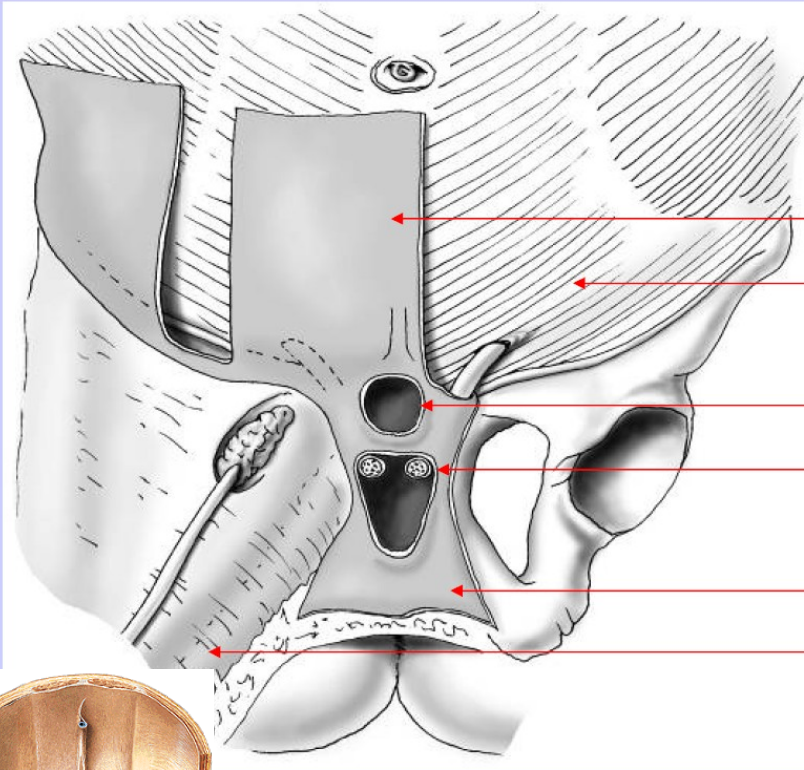
# Abdomen



## Projection of the organs



**slezina- slezinné žebro**  
(10. žebro nalevo)



## **Fasciae abdominis**

**fascia Camperova**

**fascia Scarpova =**

**fascia abdominis subcutanea**

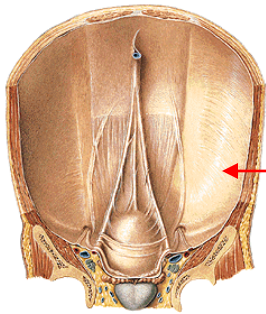
**fascia abdominis superficialis**

**fascia penis superficialis**

**přechod fascie do tunica dartos**

**fascia perinei superficialis**

**fascia lata femoris**



**fascia transversalis**



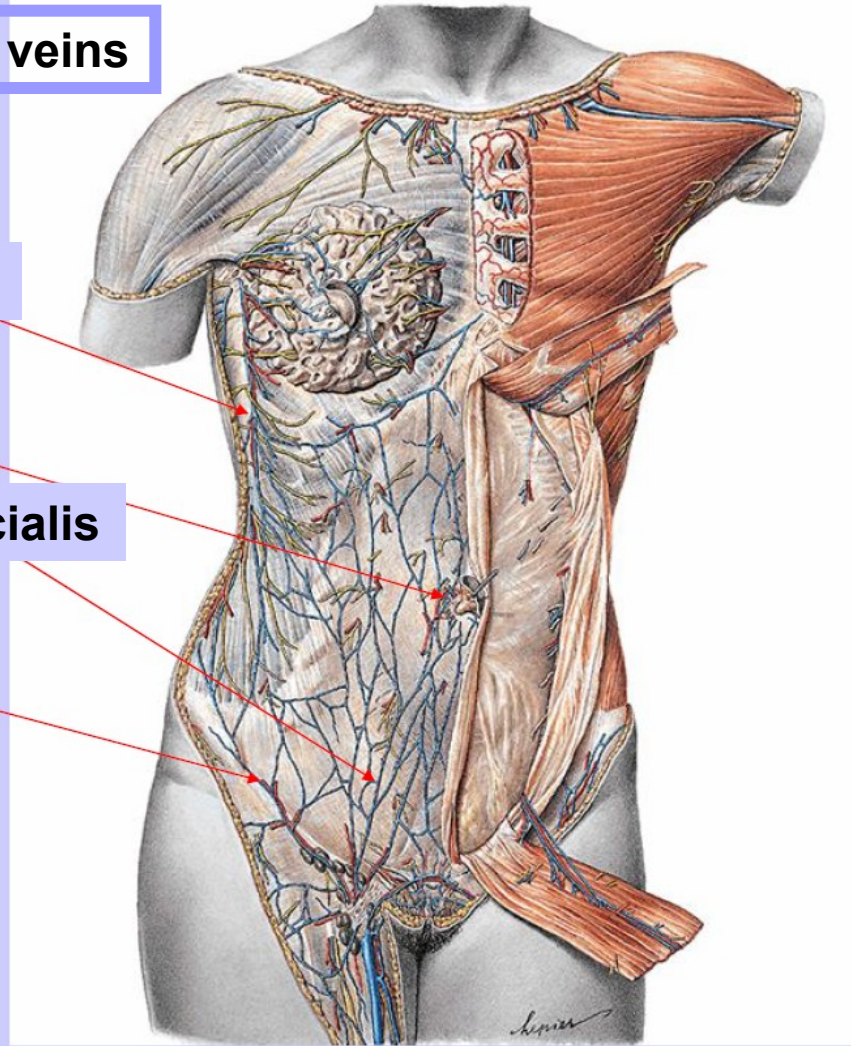
## Abdominal superficial veins

v.thoracoepigastrica

vv.paraumbilicales

v.epigastrica superficialis

v.circumflexa ilium  
superficialis



## Cutaneous nerves

### Inervace:

nn. intercostales 5.- 11.

pl. lumbalis:

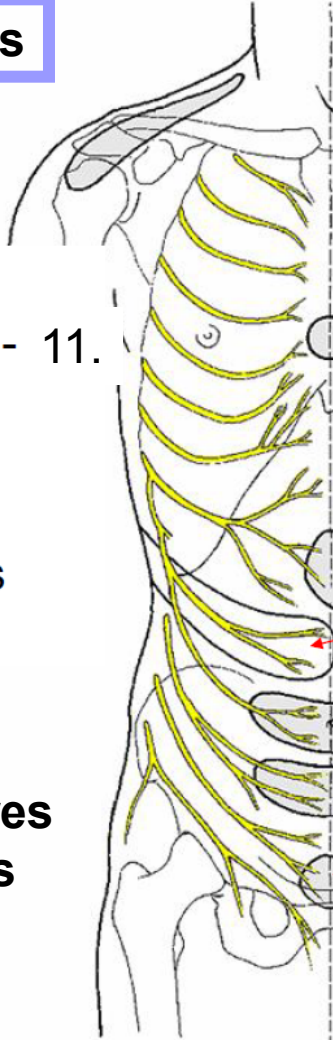
n. subcostalis

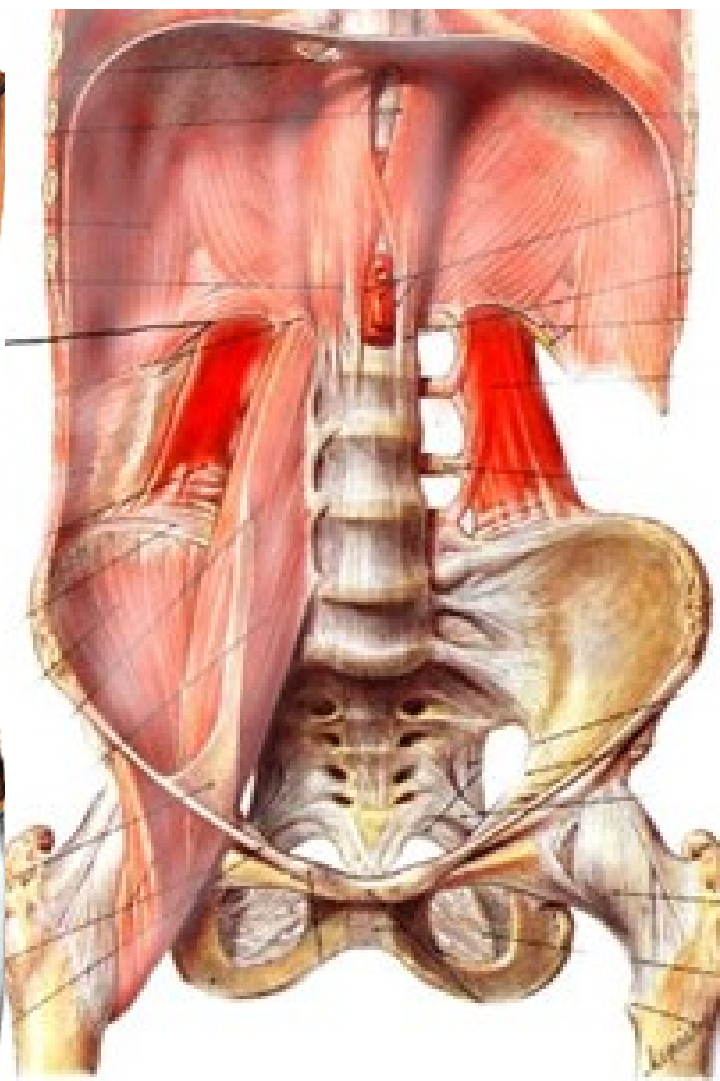
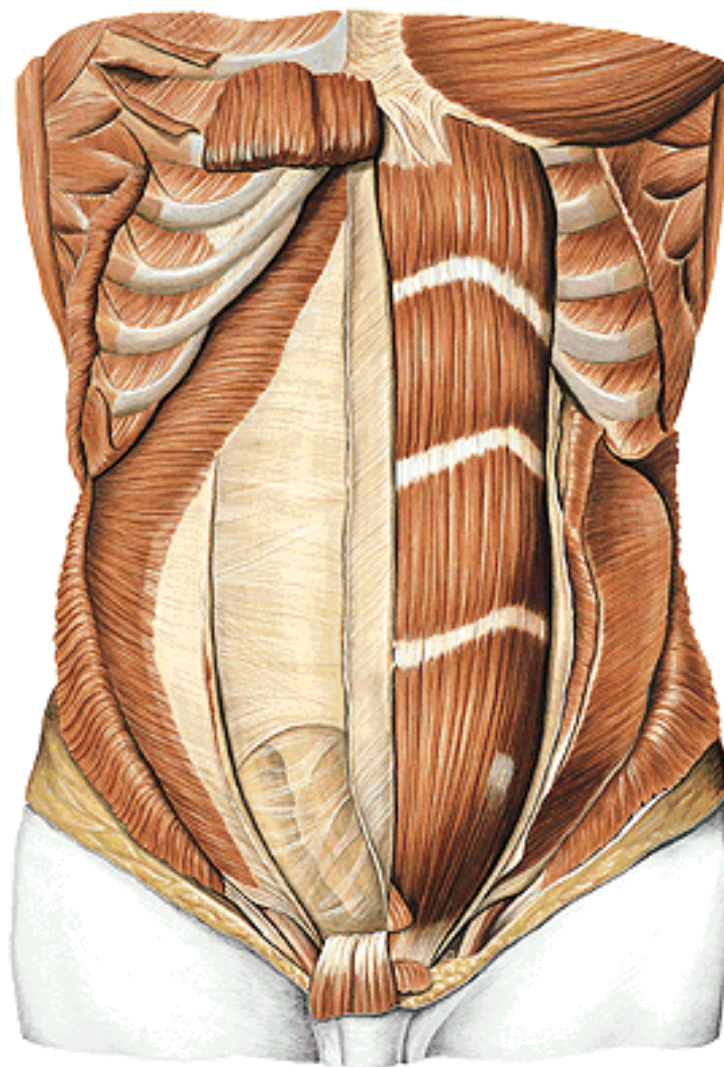
n. iliohypogastricus

n. ilioinguinalis

**rr.cutanei anteriores**

**rr.cutanei laterales**





## Arteriae of the abdominal wall

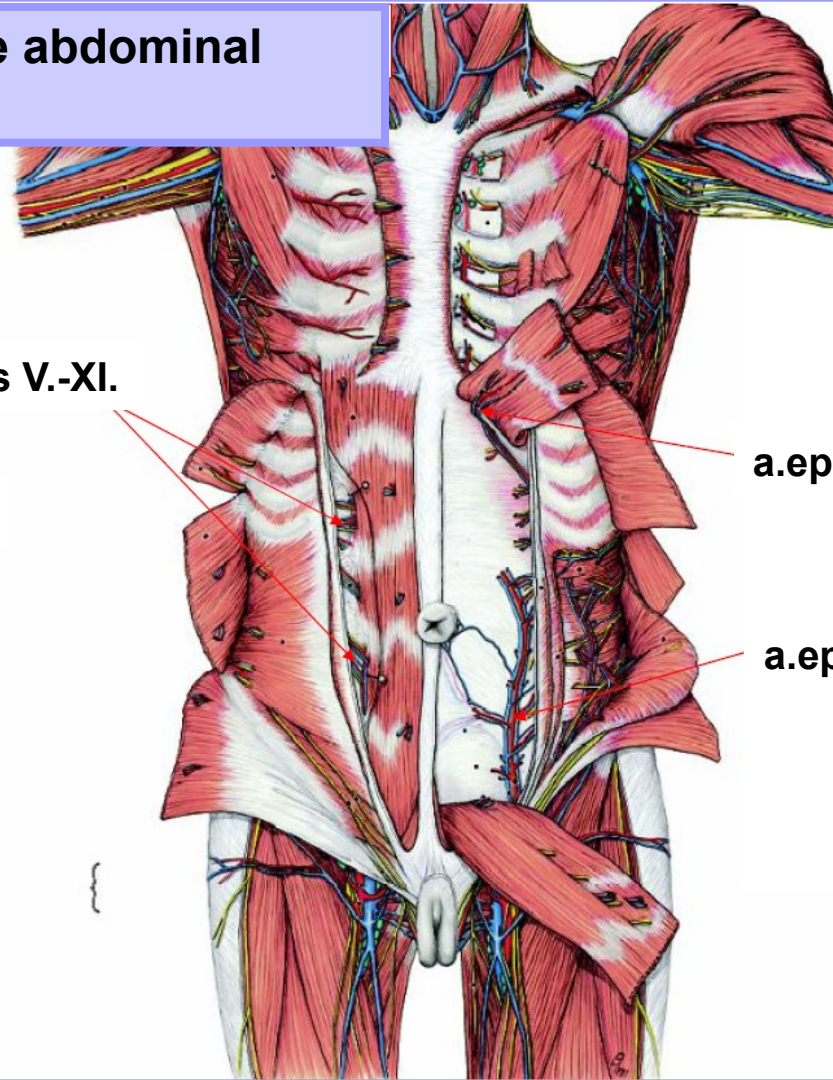
aa.intercostales V.-XI.

a.subcostalis

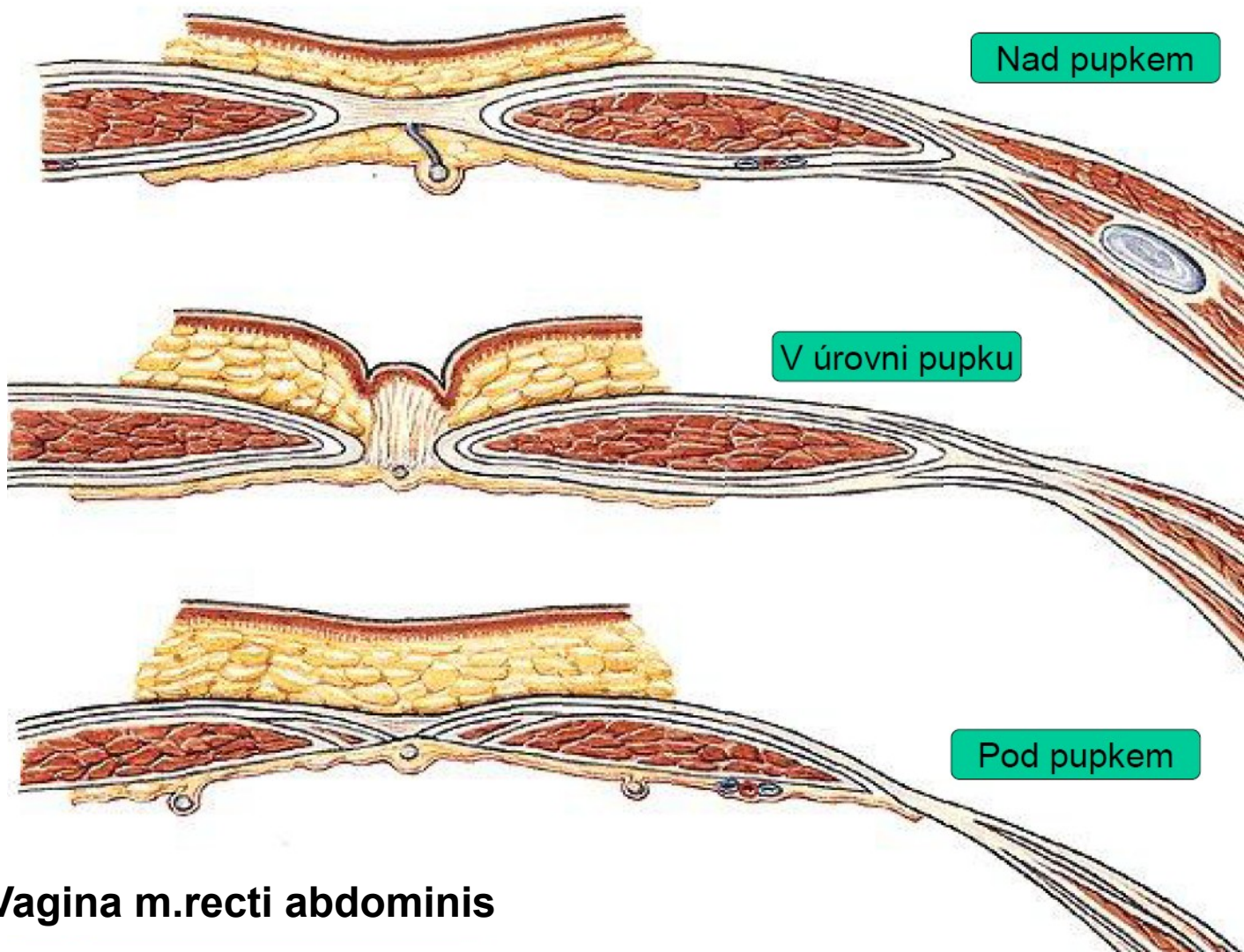
aa.lumbales

a.epigastrica sup.

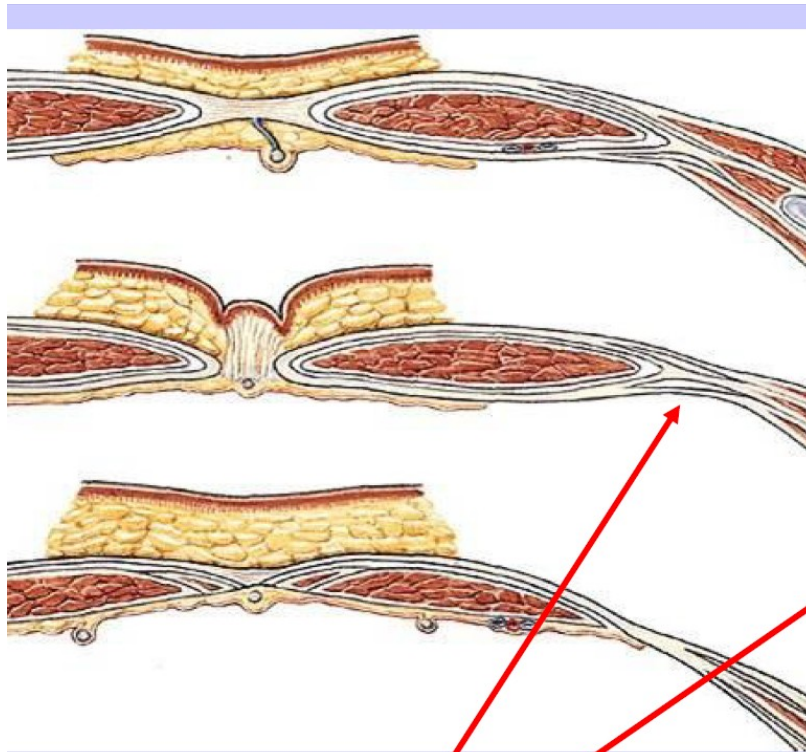
a.epigastrica inf.



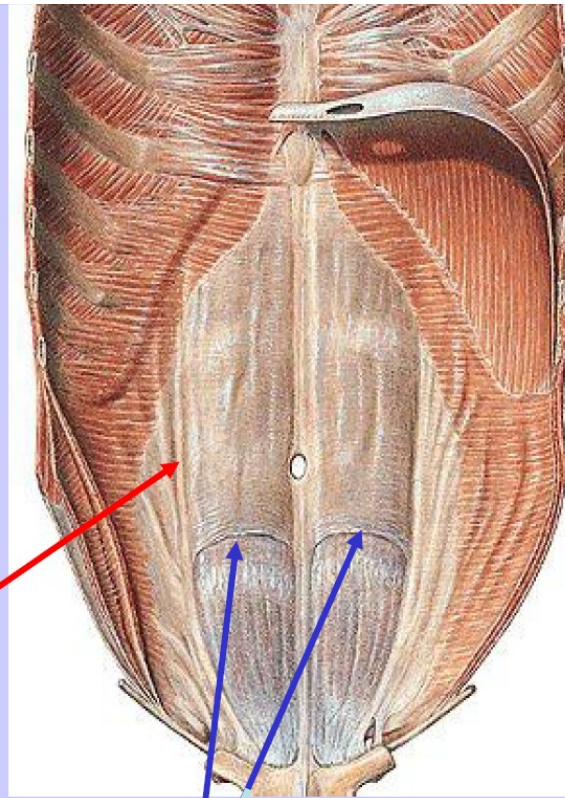




**Vagina m.recti abdominis**

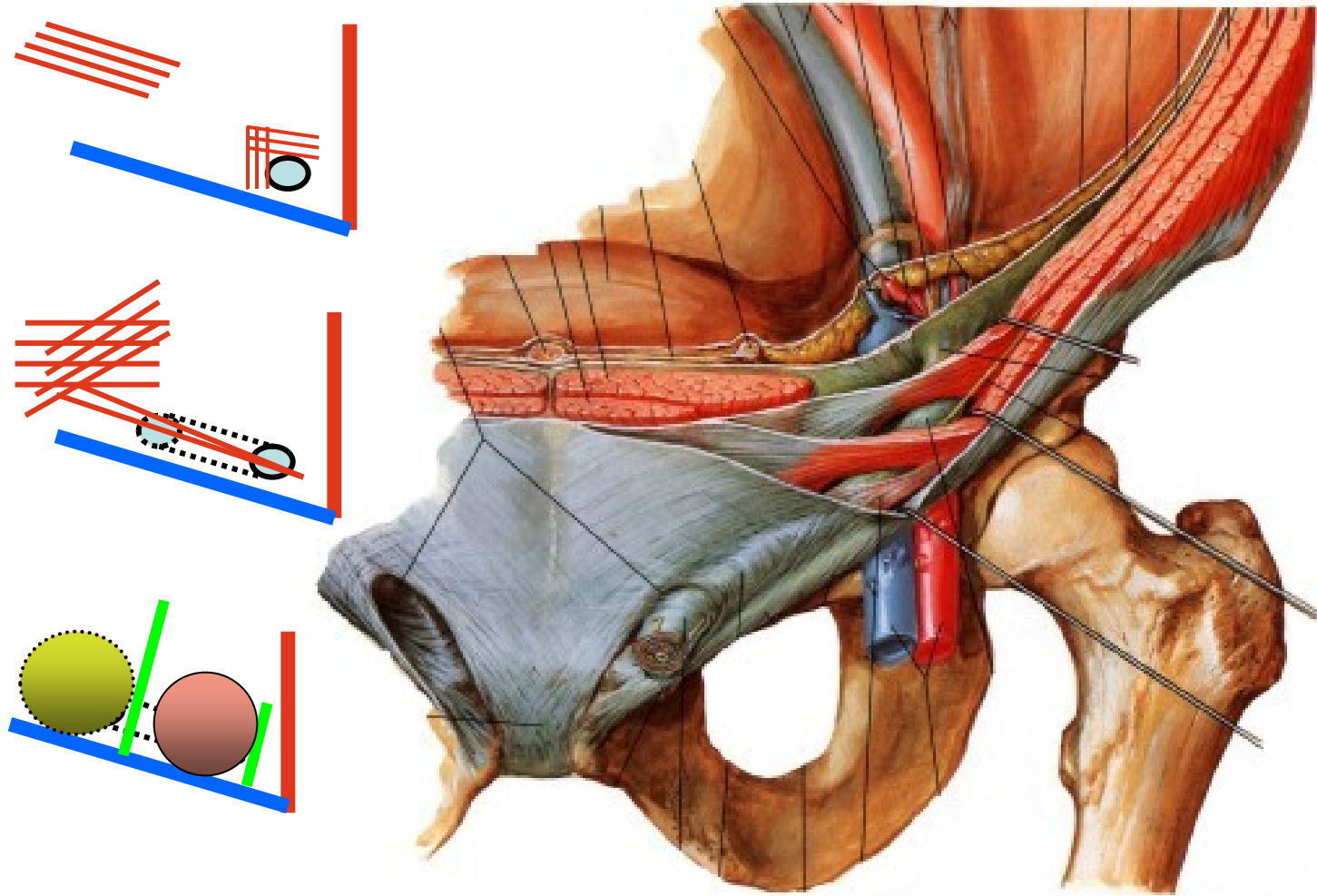


Linea semilunaris



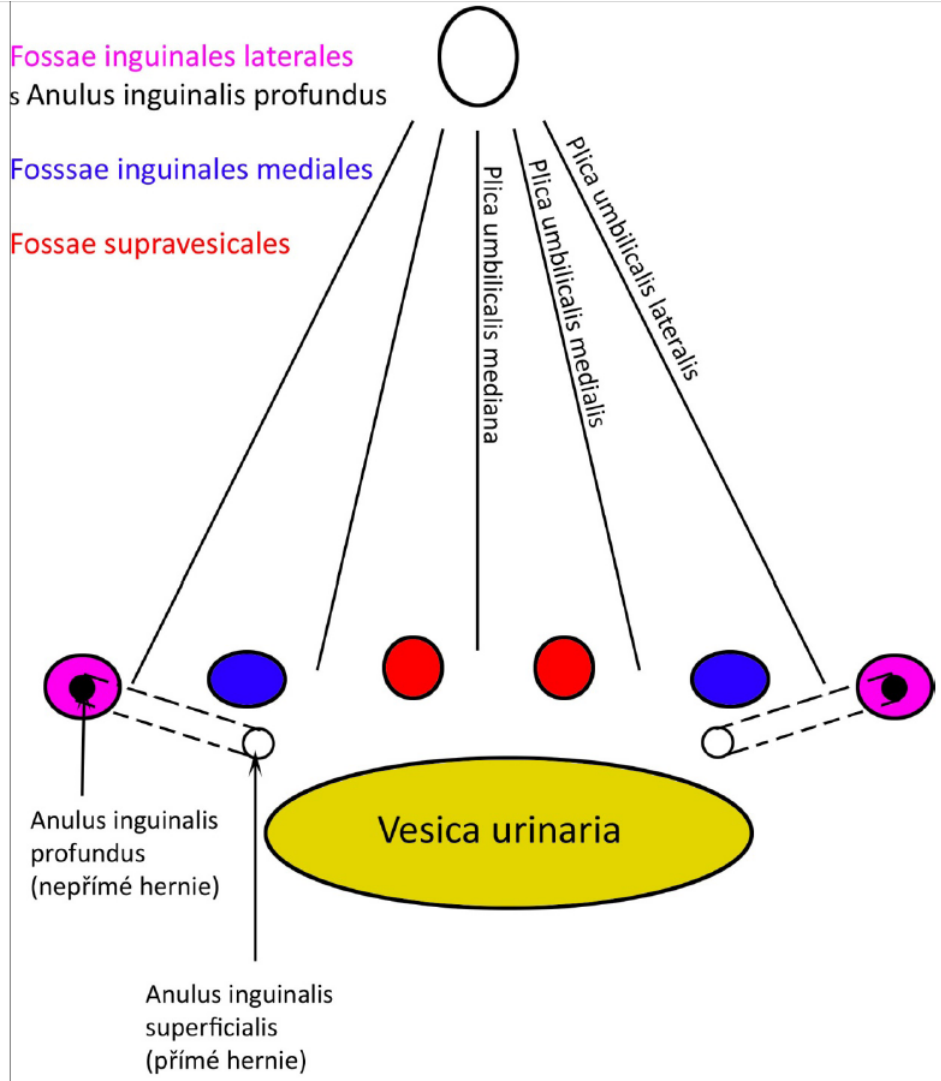
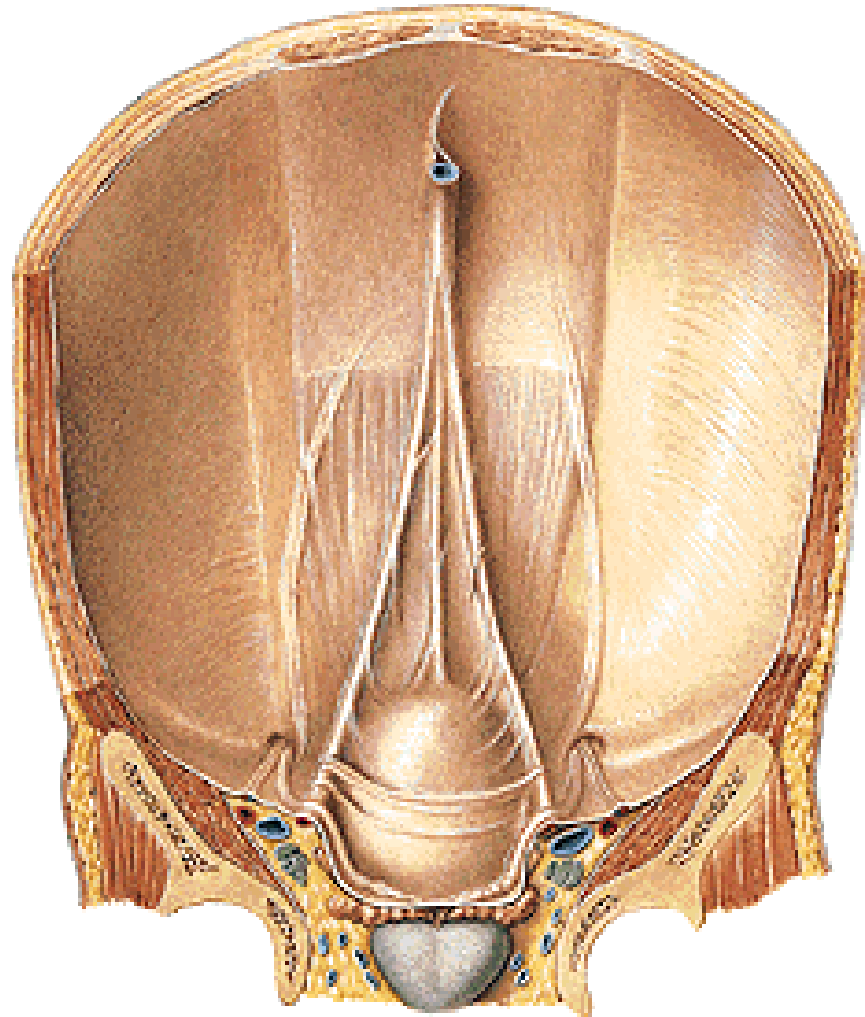
Linea arcuata (semicircularis)



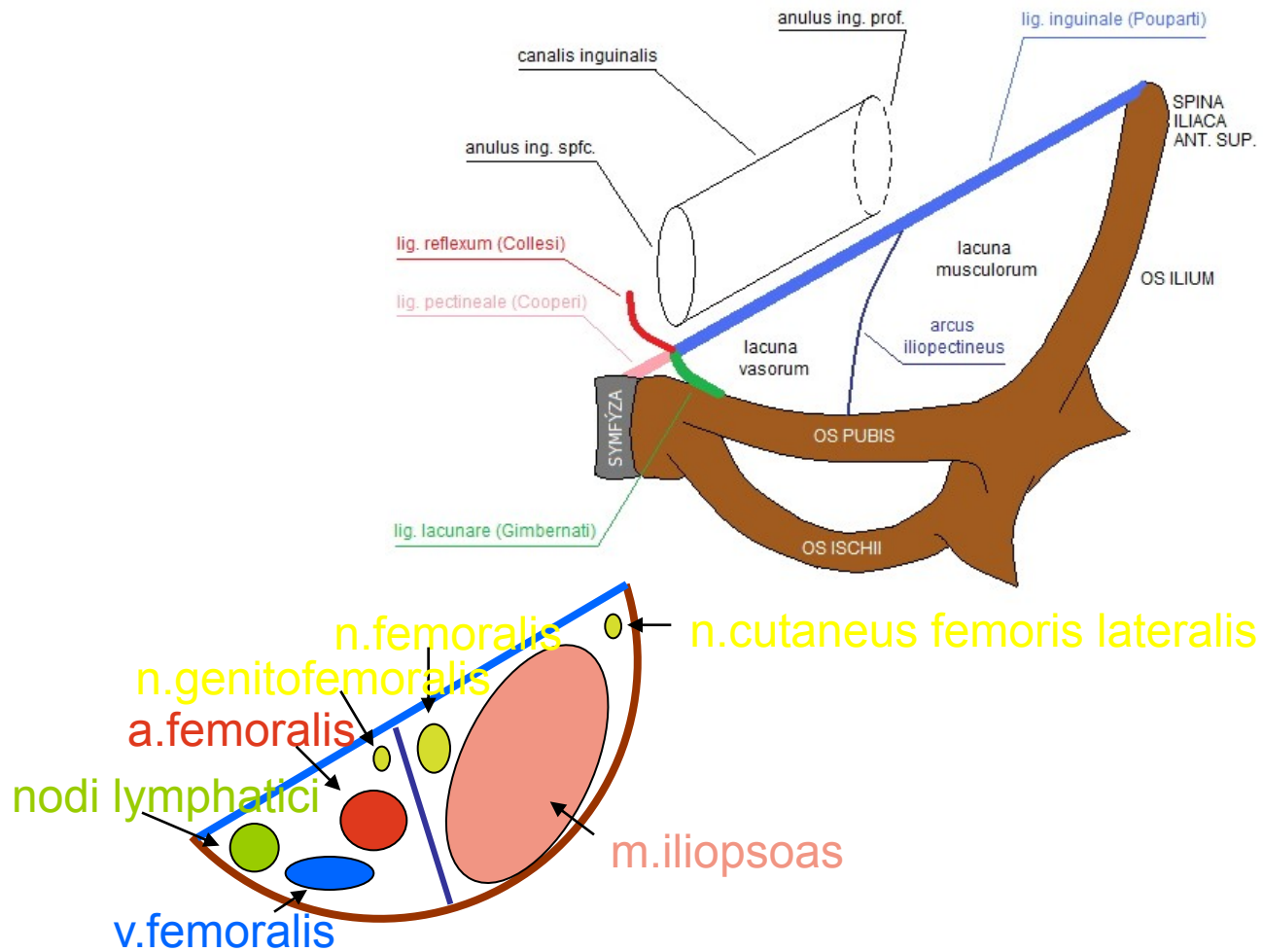


Inguinal canal

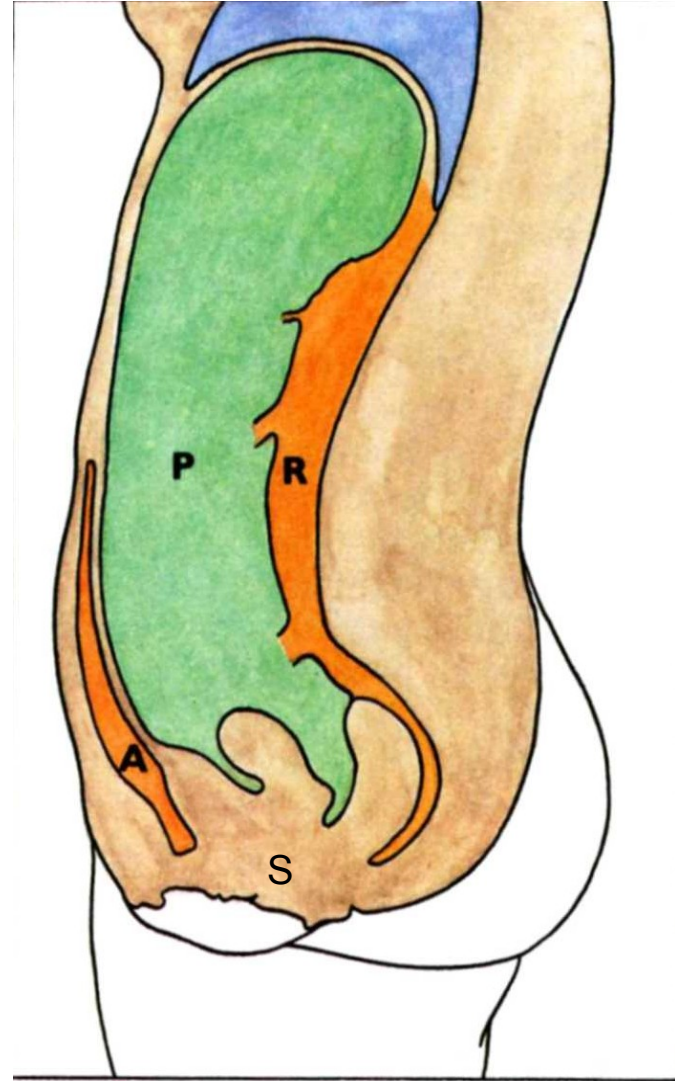
# Peritoneal folds-anterior abdominal wall



# Lacuna musculorum et vasorum

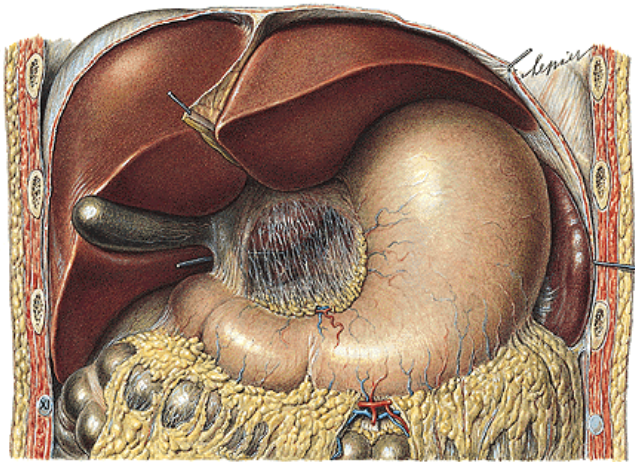


# Peritoneum

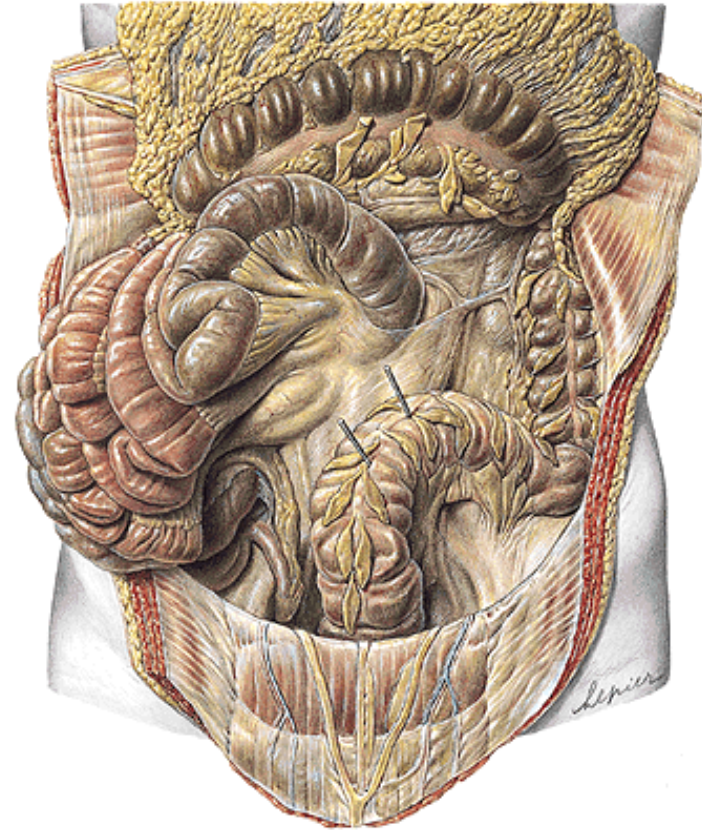


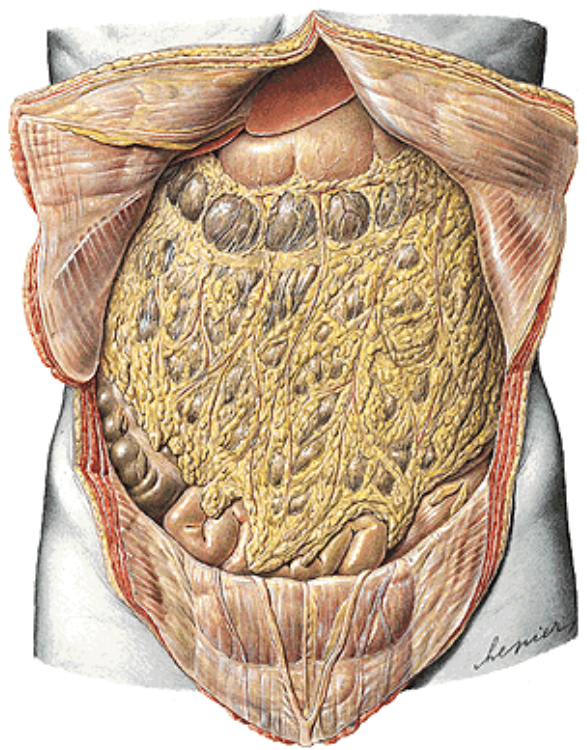
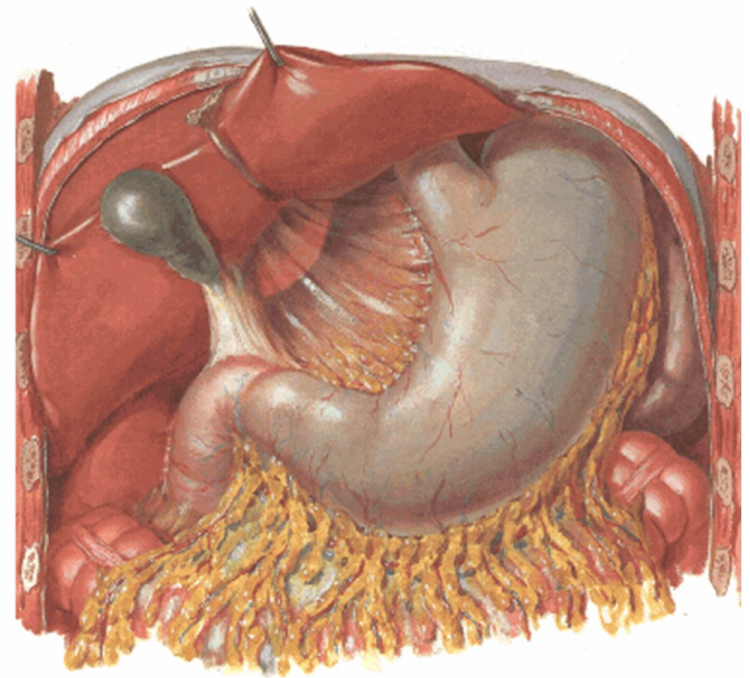
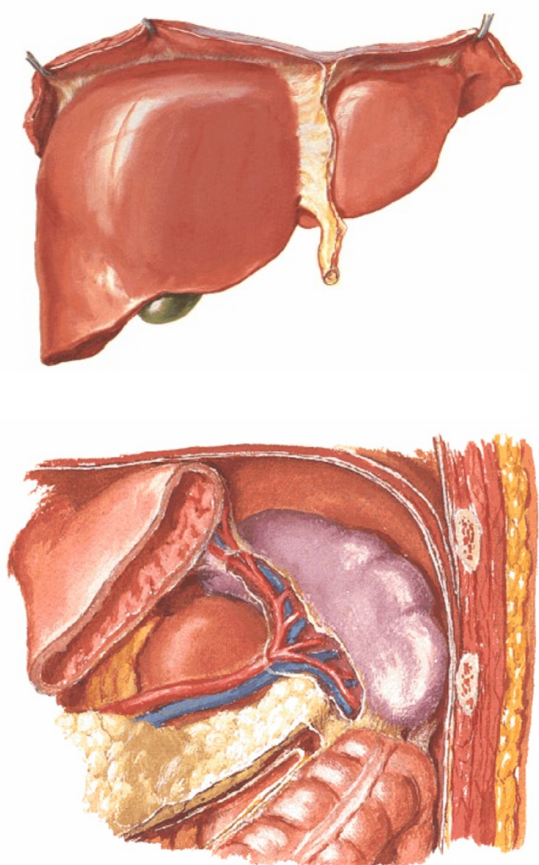


## Intraperitoneal organs



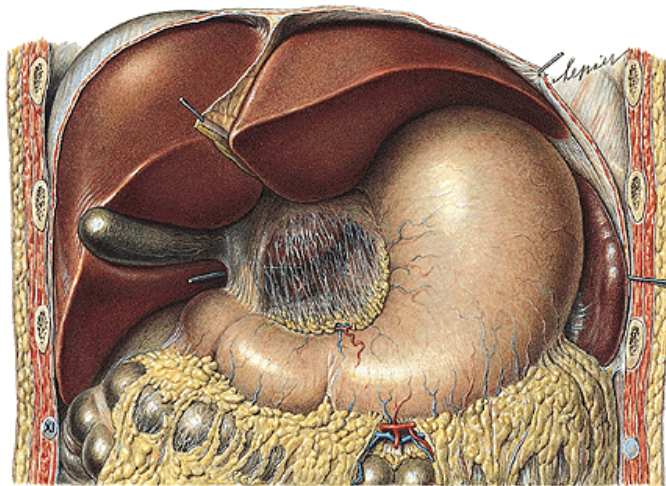
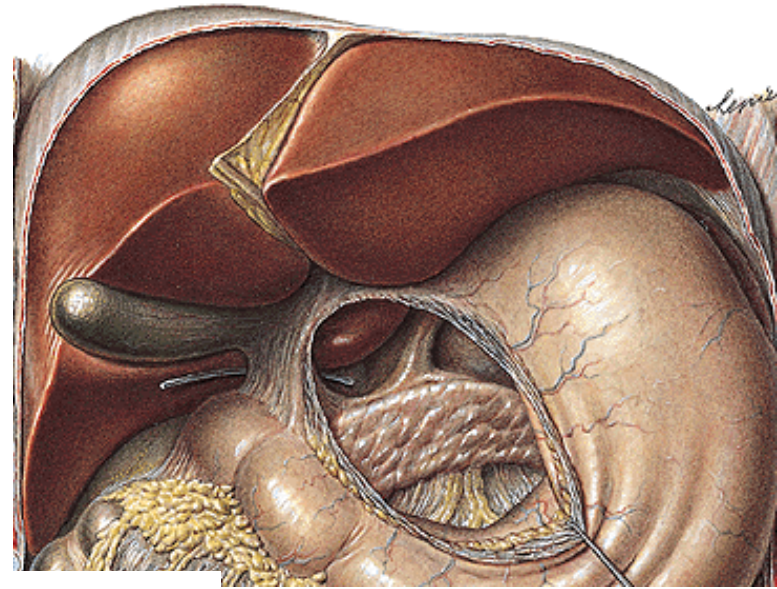
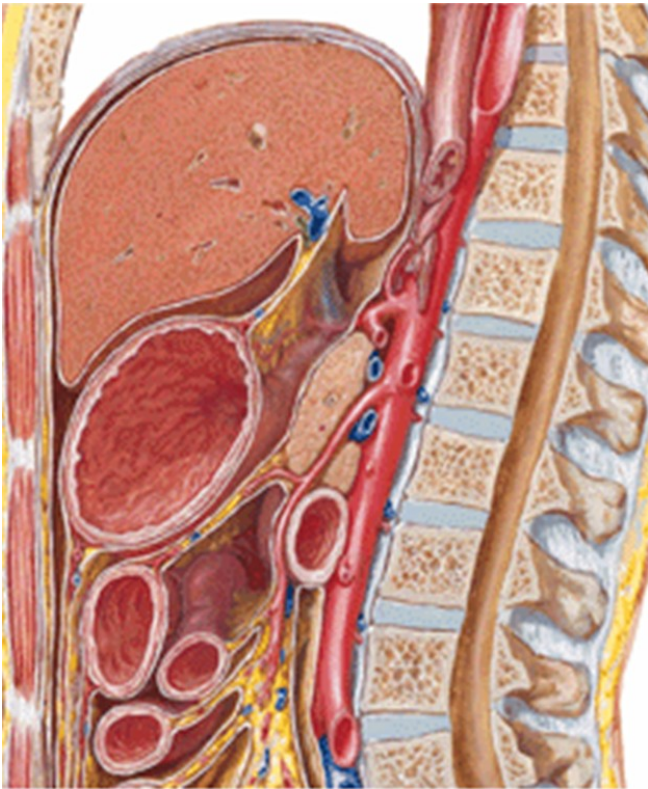
pars supramesocolica et inframesocolica

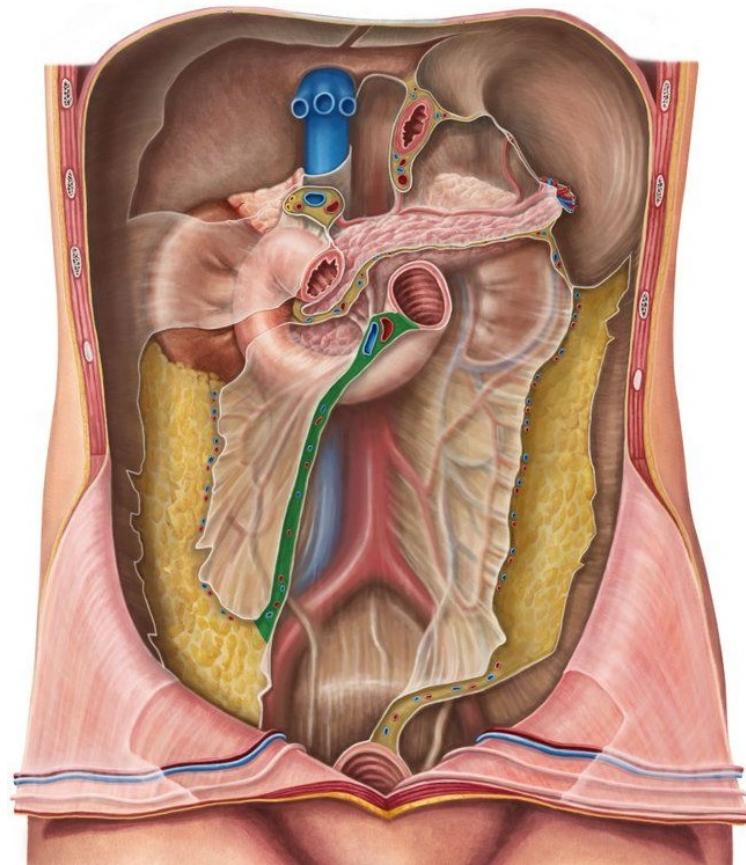






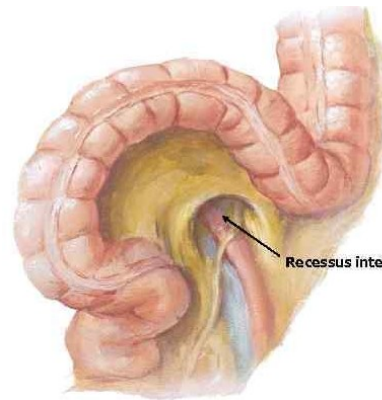
## Bursa omentalis



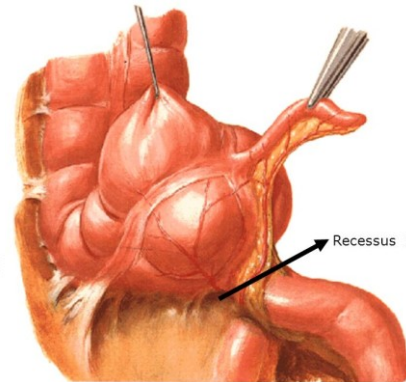


Pars inframesocolica dextra et sinistra



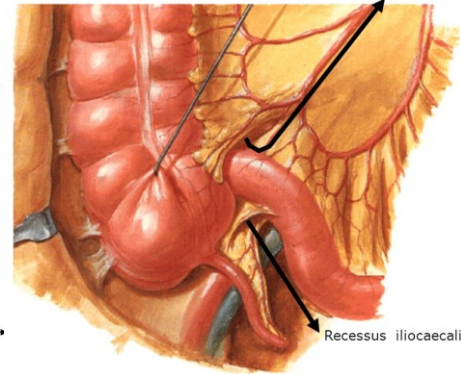


Recessus intersigmoideus

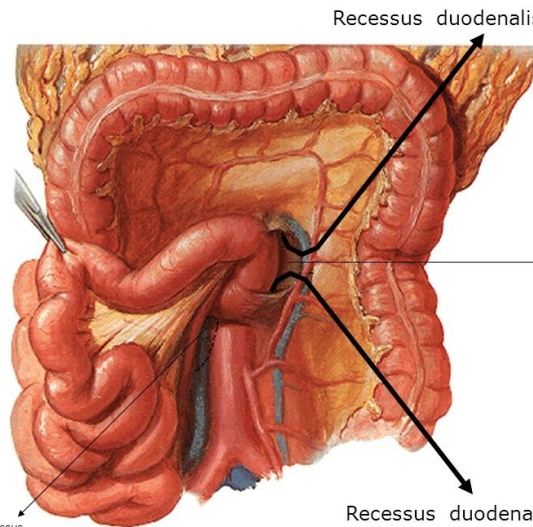


Recessus retrocaecalis

Recessus iliocaecalis superior



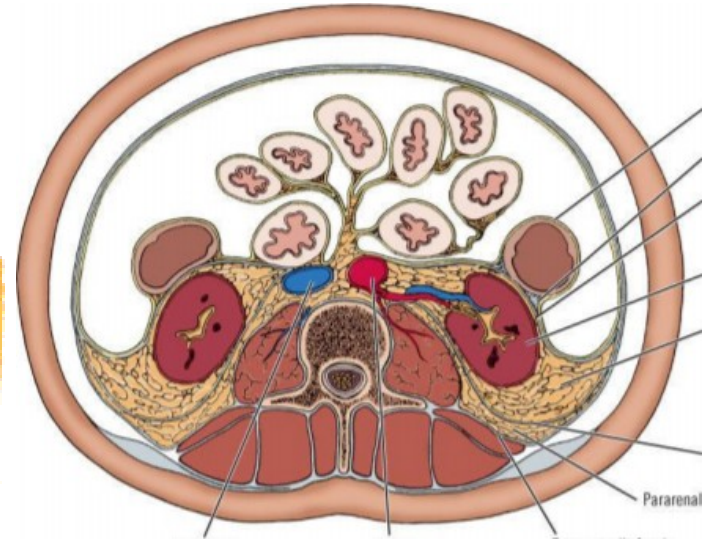
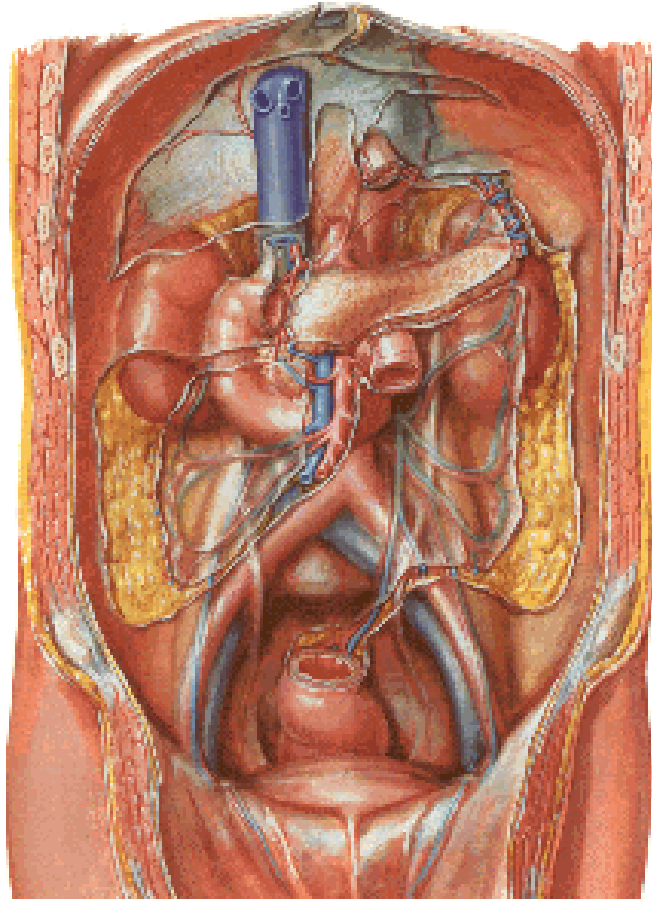
Recessus iliocaecalis inferior



Recessus duodenalis

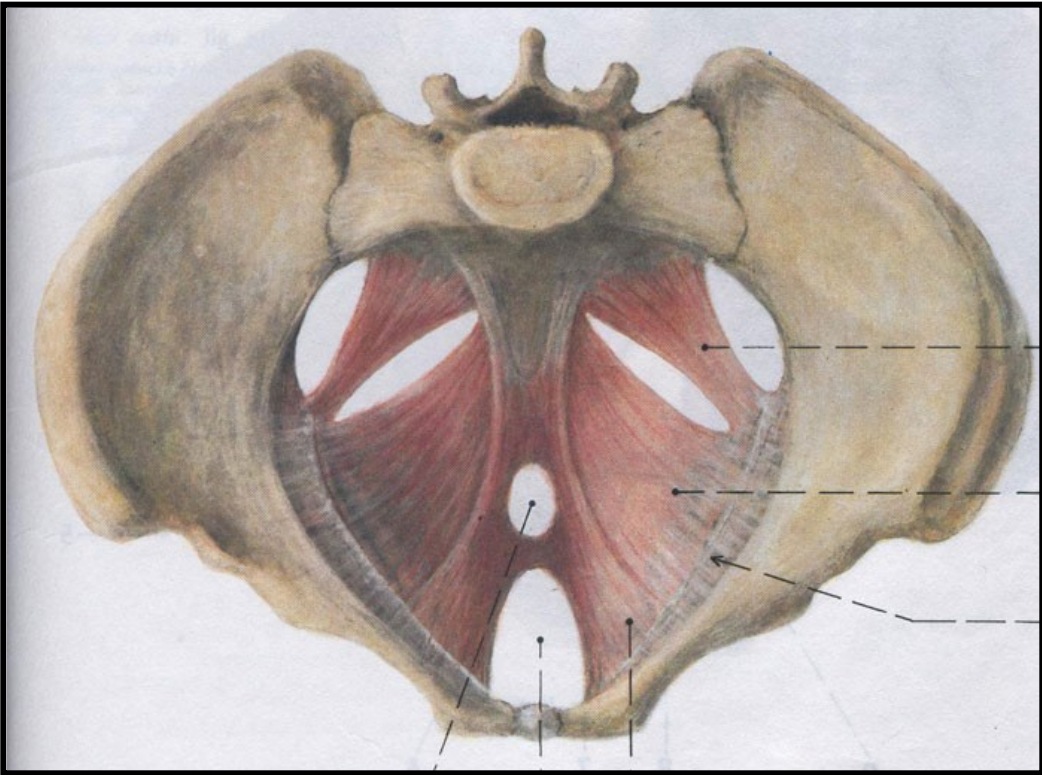
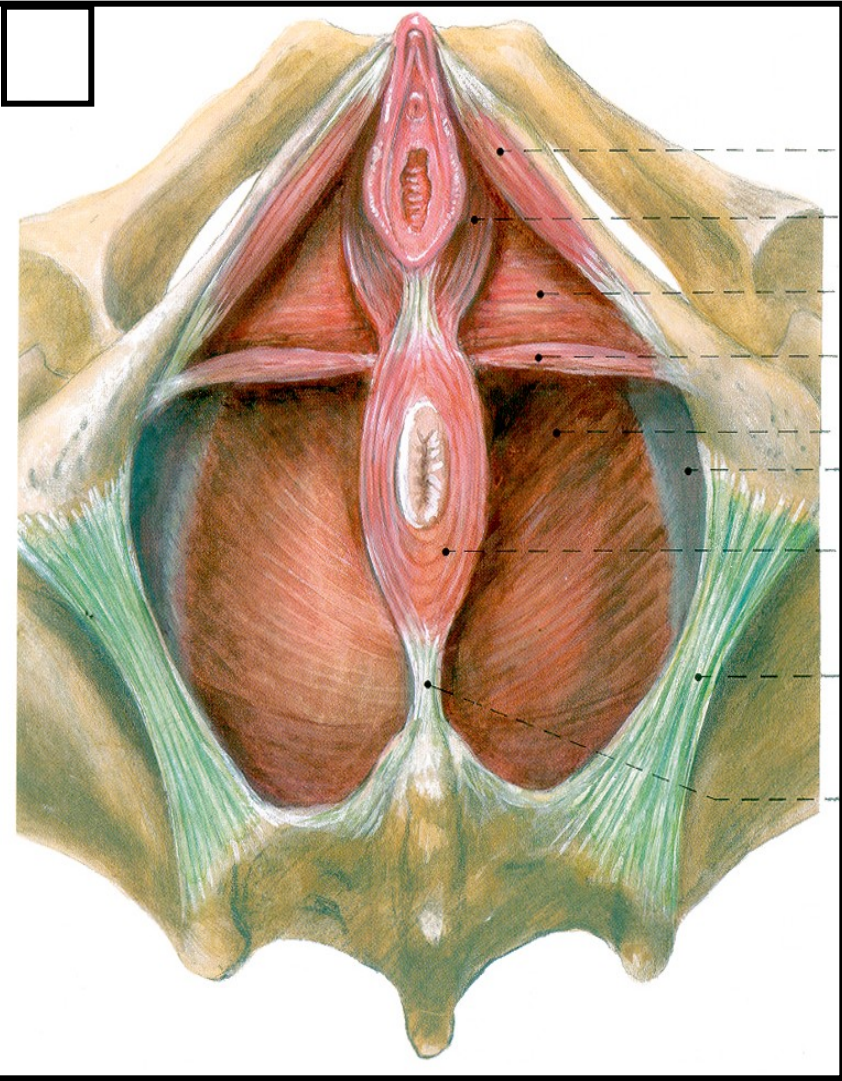
Recessus duodenalis inferior

# Retroperitoneal organs



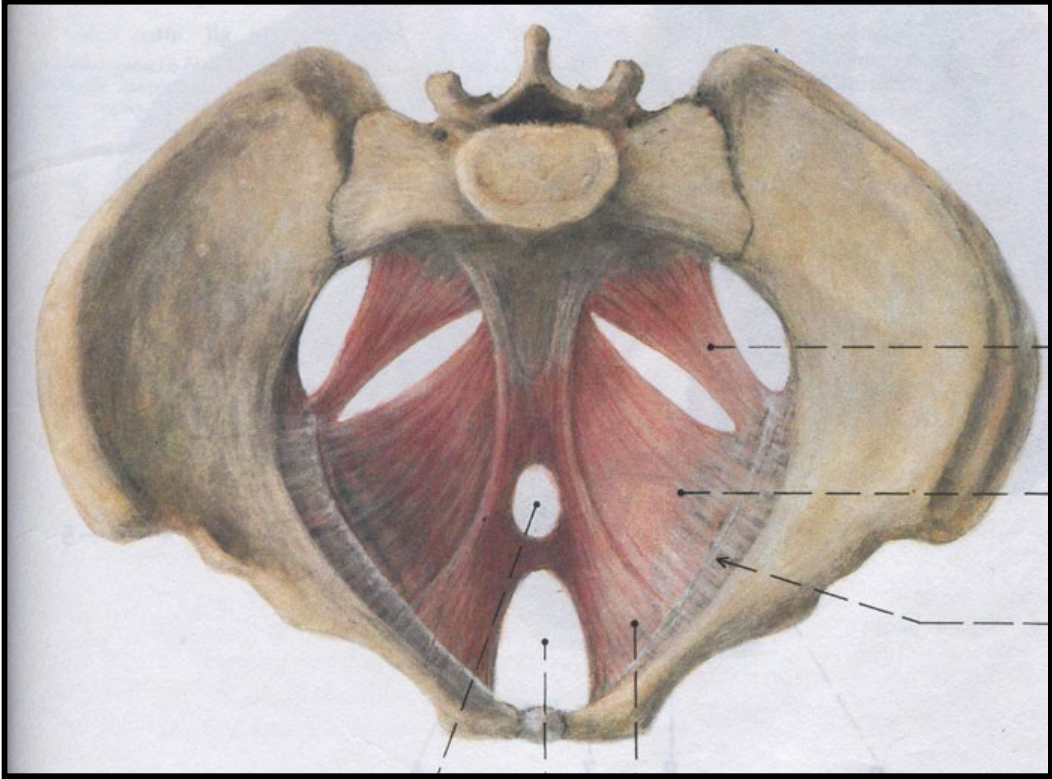
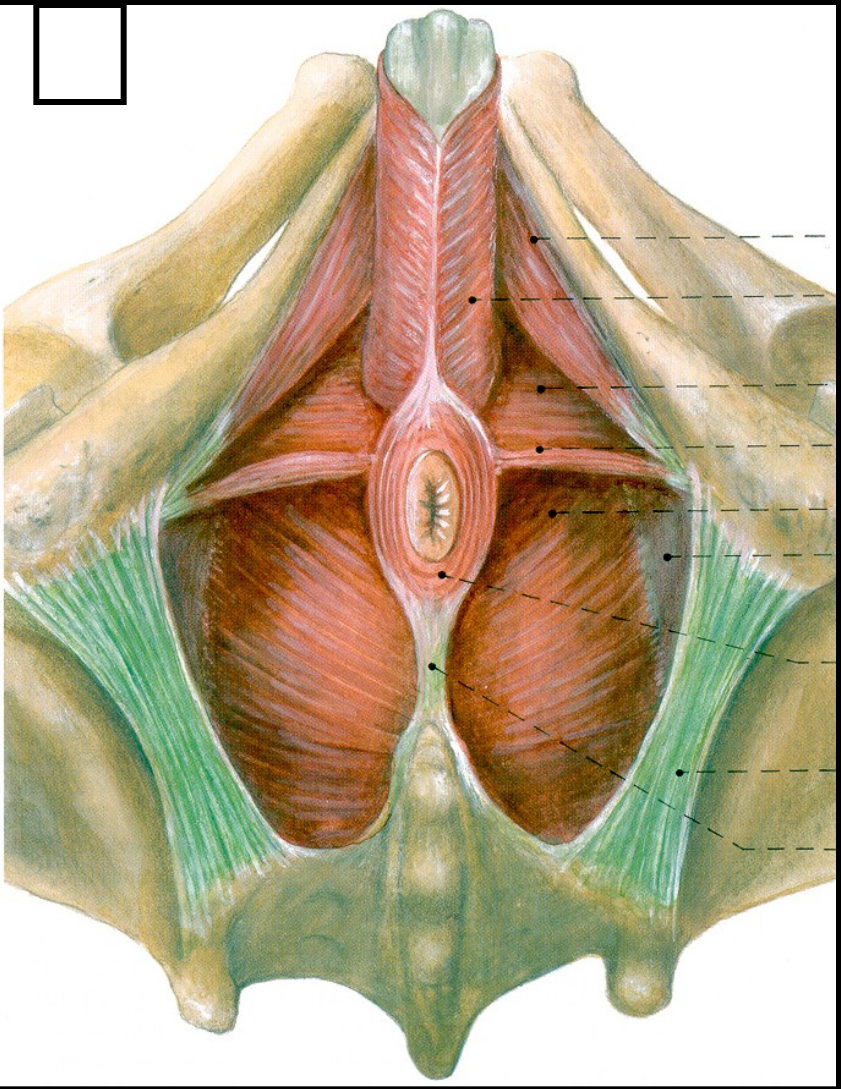


**Diaphragma pelvis et urogenitale**

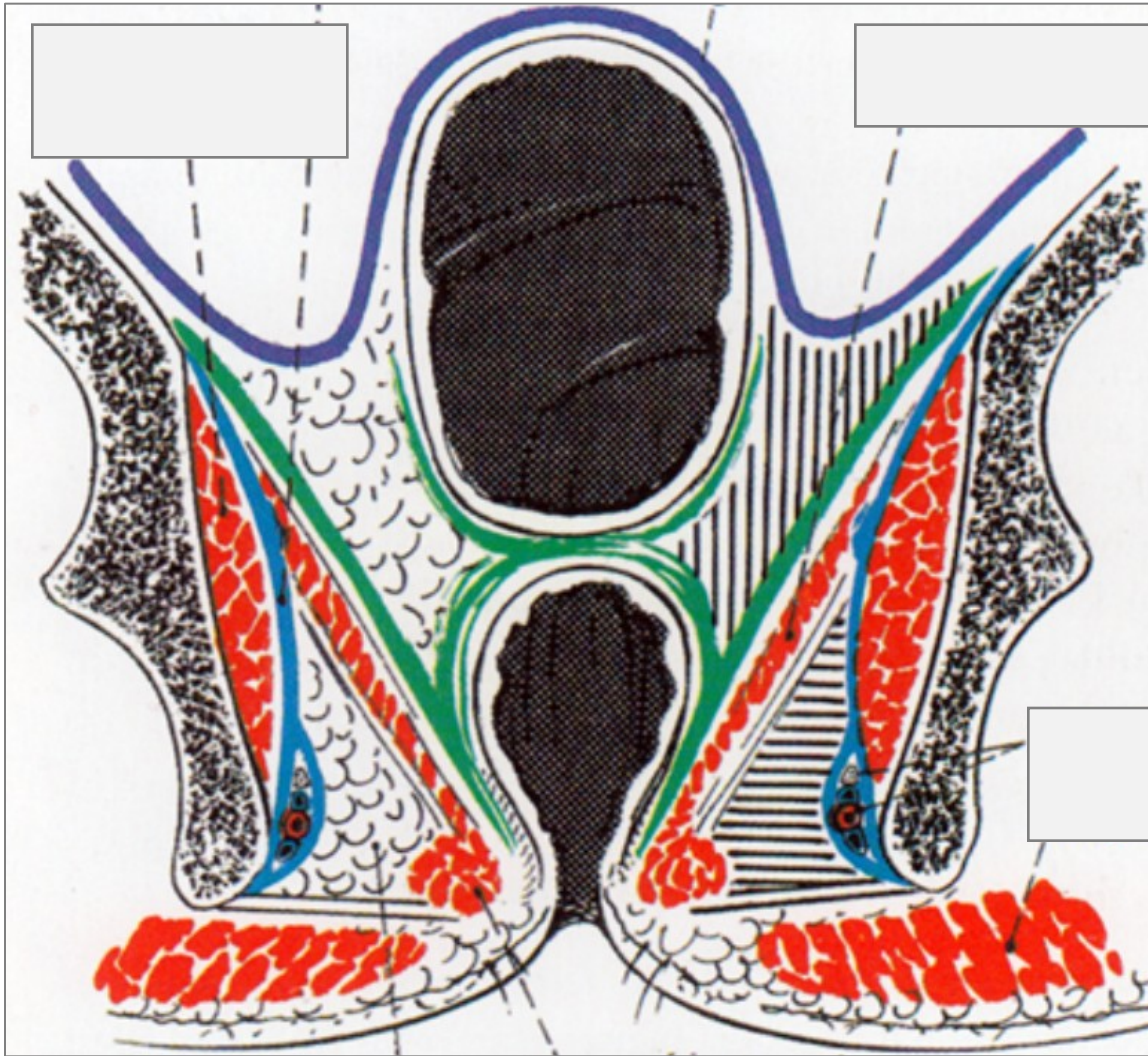




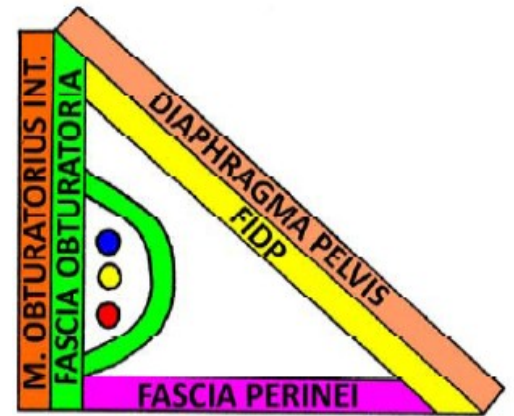
**Diaphragma pelvis et urogenitale**



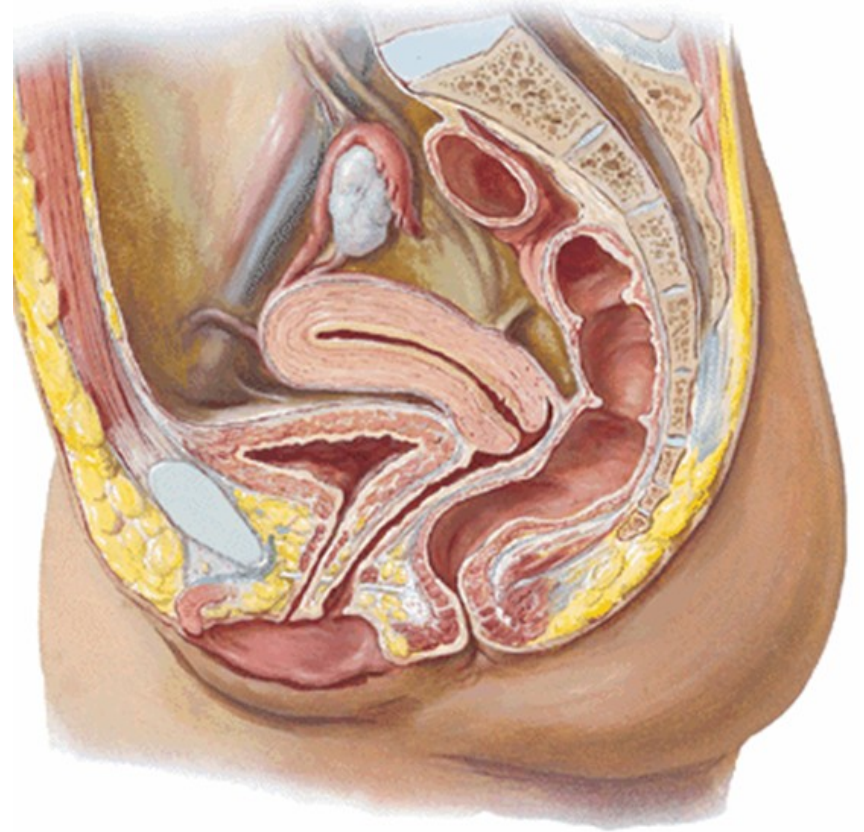
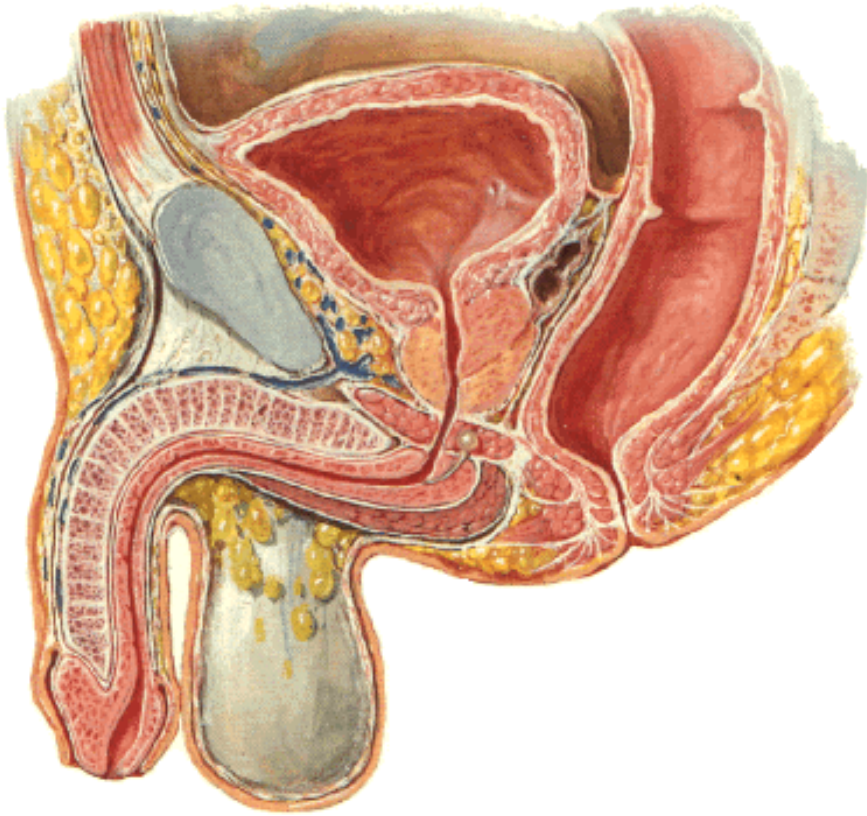




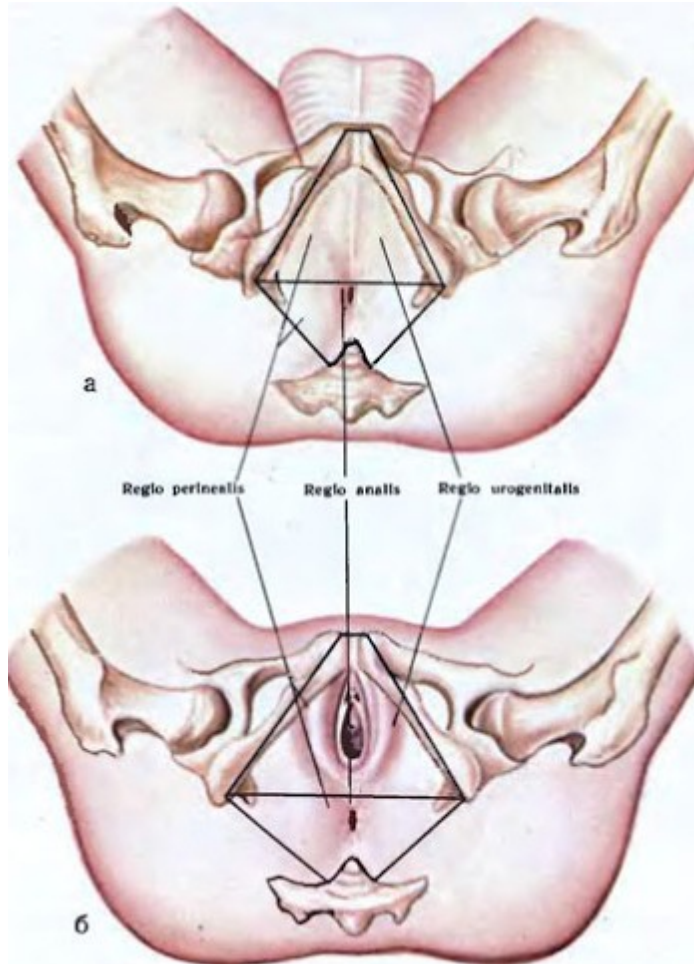
**Fossa ischiorectalis**



## Infraperitoneal organs







**Regio urogenitalis**

**Regio analis**

