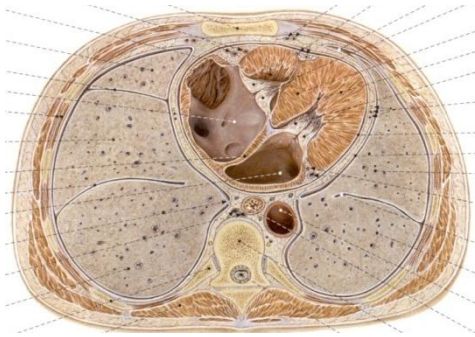


# ***Mellkasi szervek topográfiája, a mellkas metszetanatómiája***



*Pleura- és pericardiumpunkció  
Coronaria bypass műtét topográfiája*

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***Dr. Székely Andrea Dorottya***

*Semmelweis Egyetem*

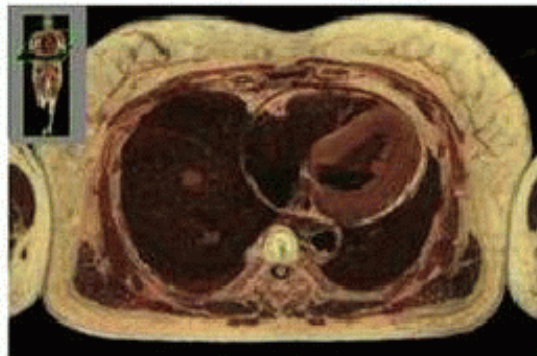
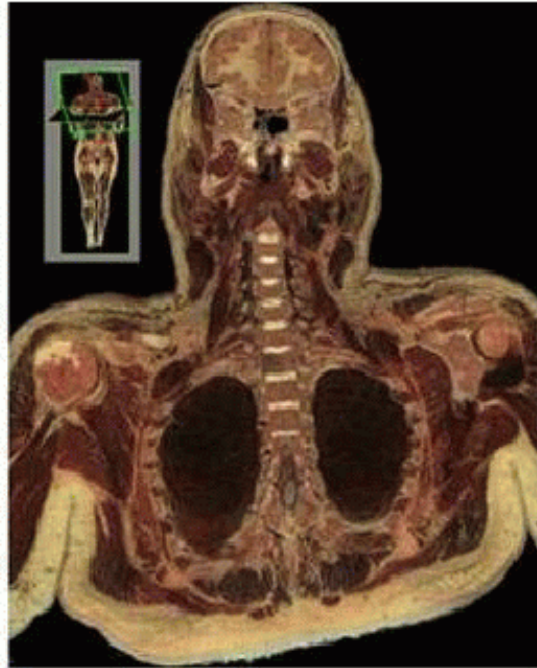
*Általános Orvostudományi Kar*

*Anatomiai, Szövet- és Fejlődéstani Intézet*

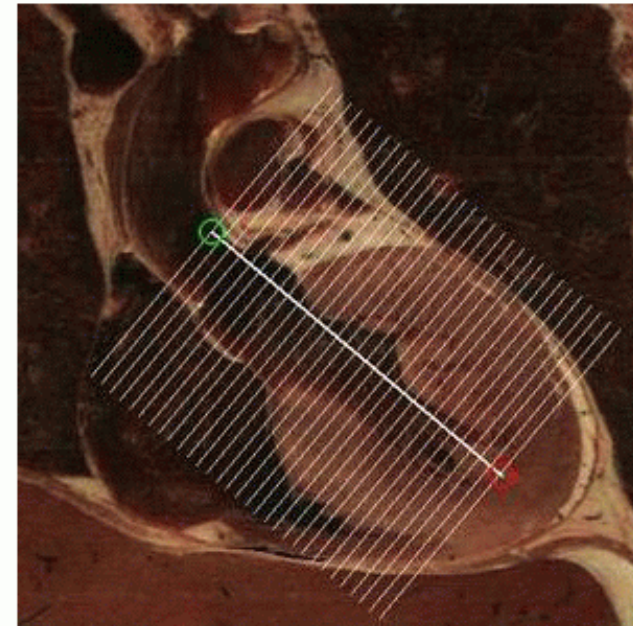
*Budapest*



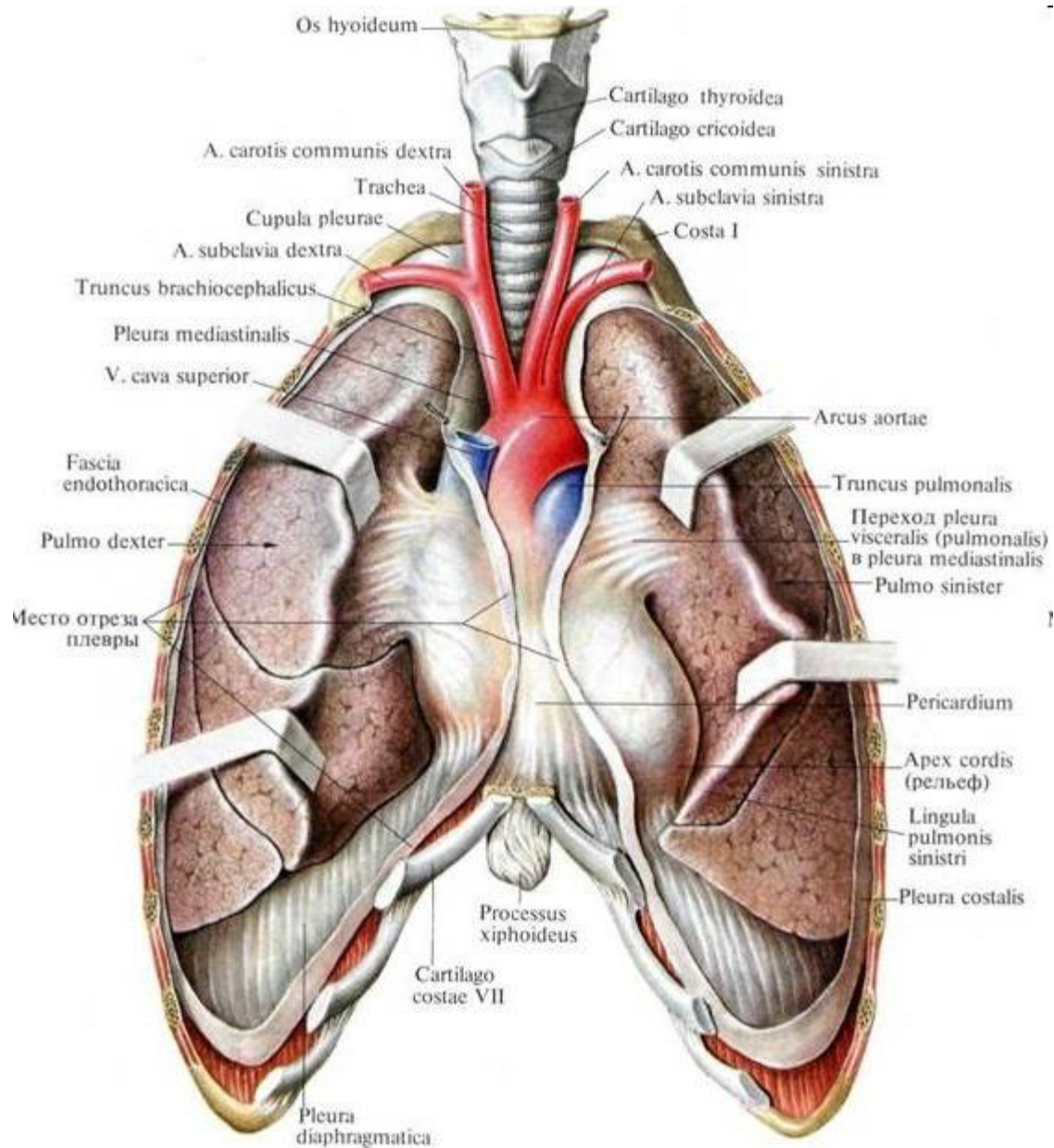
# A MELLKASI SZERVEK ELHELYEZKEDÉSE



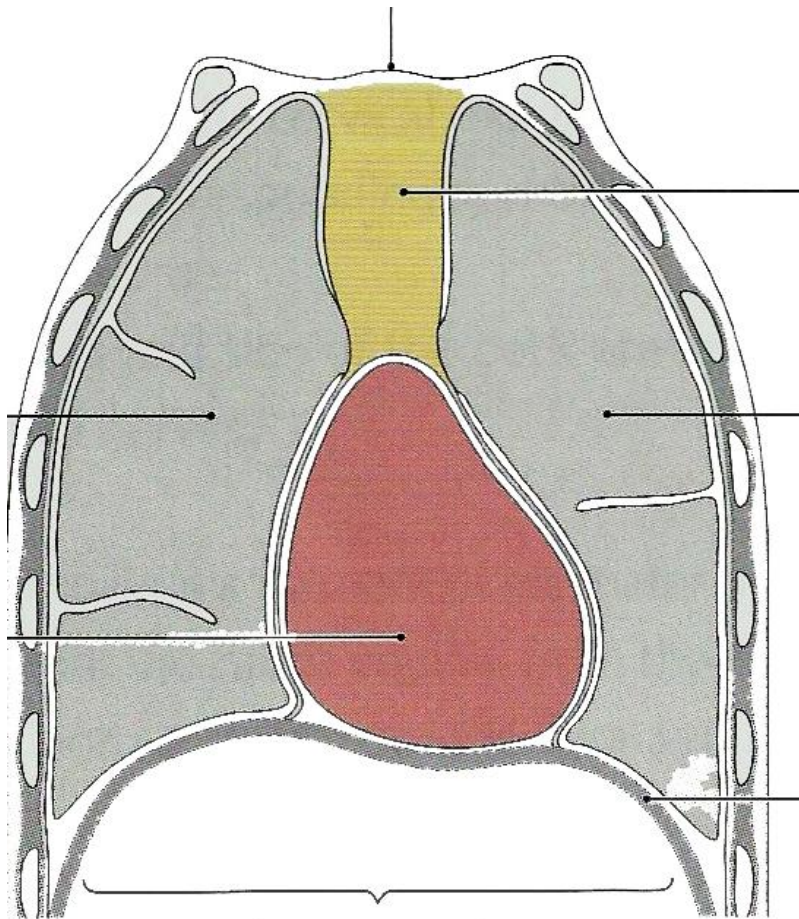
To begin, click on any icon.  
For a complete tour there is no need to return to the main page except to view more movies. You can access all still images by following the links on the following pages.  
Some movies were not cross-linked from the stills, therefore you need to access them from the movie page. They are best viewed clicking through them step by step, instead of playing them at the standard rate.  
Click on an image for a larger view.



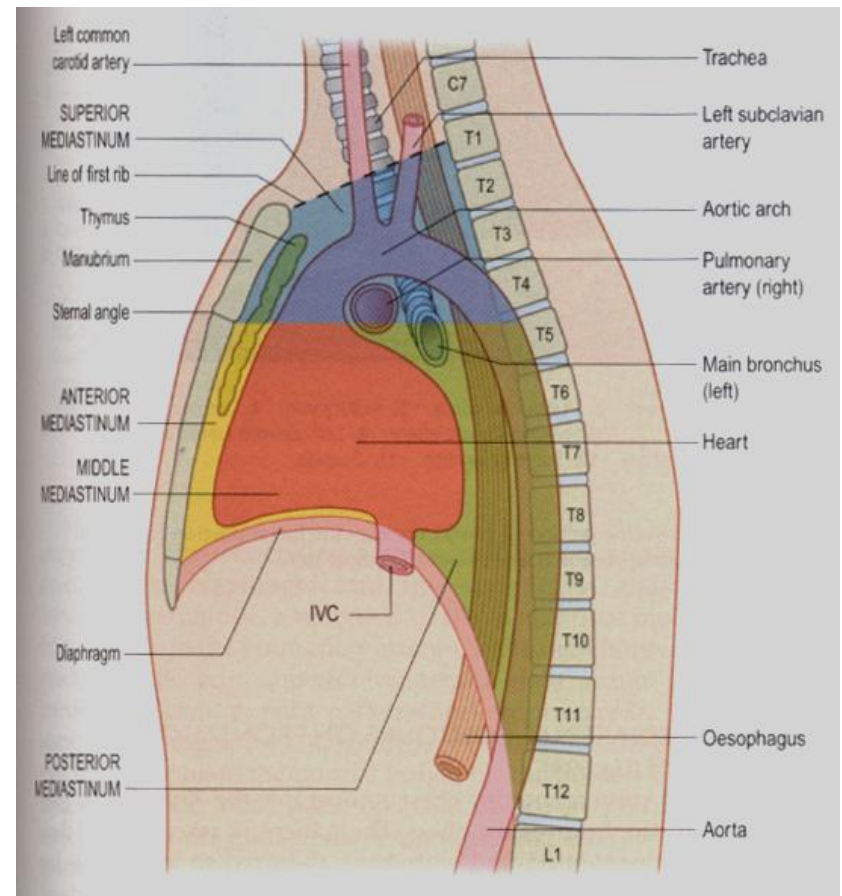
# MELKASI TOPOGRAPHIA



# A MELLKAS TEREI

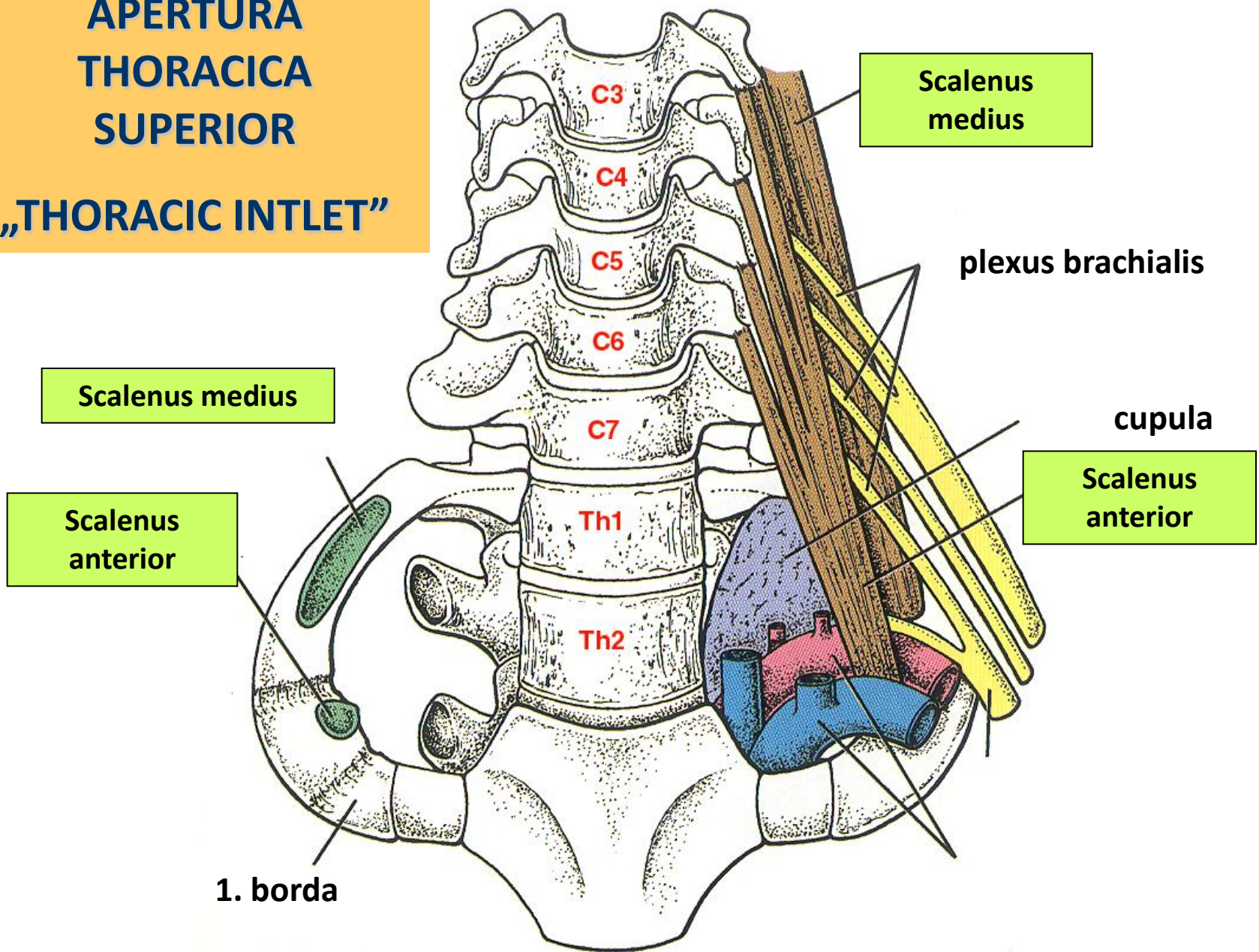


# MEDIASTINUM

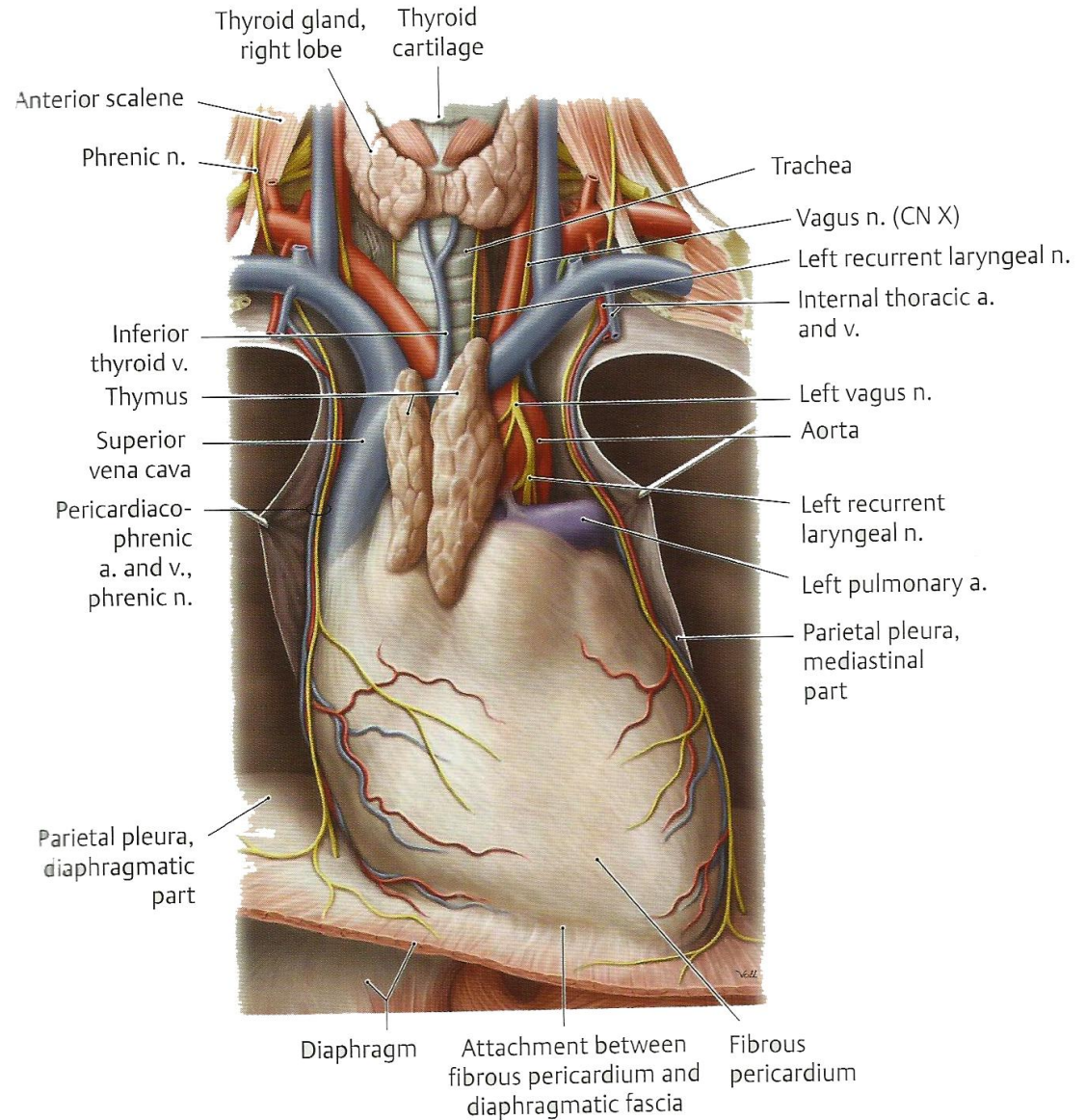
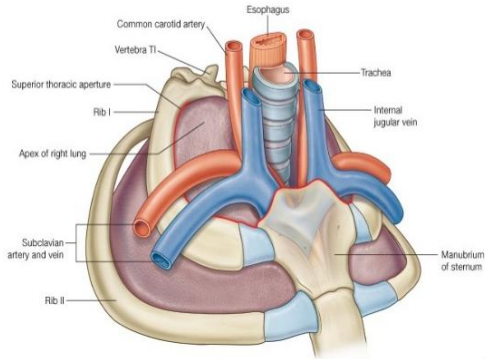


# APERTURA THORACICA SUPERIOR

„THORACIC INTLET“



# APERTURA THORACICA SUPERIOR



# TRACHEA – ÁLTALÁNOS LEÍRÁS

Elsődleges szerep:

levegő transzport **BE**  
„piszok” transzport **KI**

- Légcső kezdete : gége
- Vége: bifurcatio tracheae
  - bronchi principales
  - **Carina**

*konduktív* rész

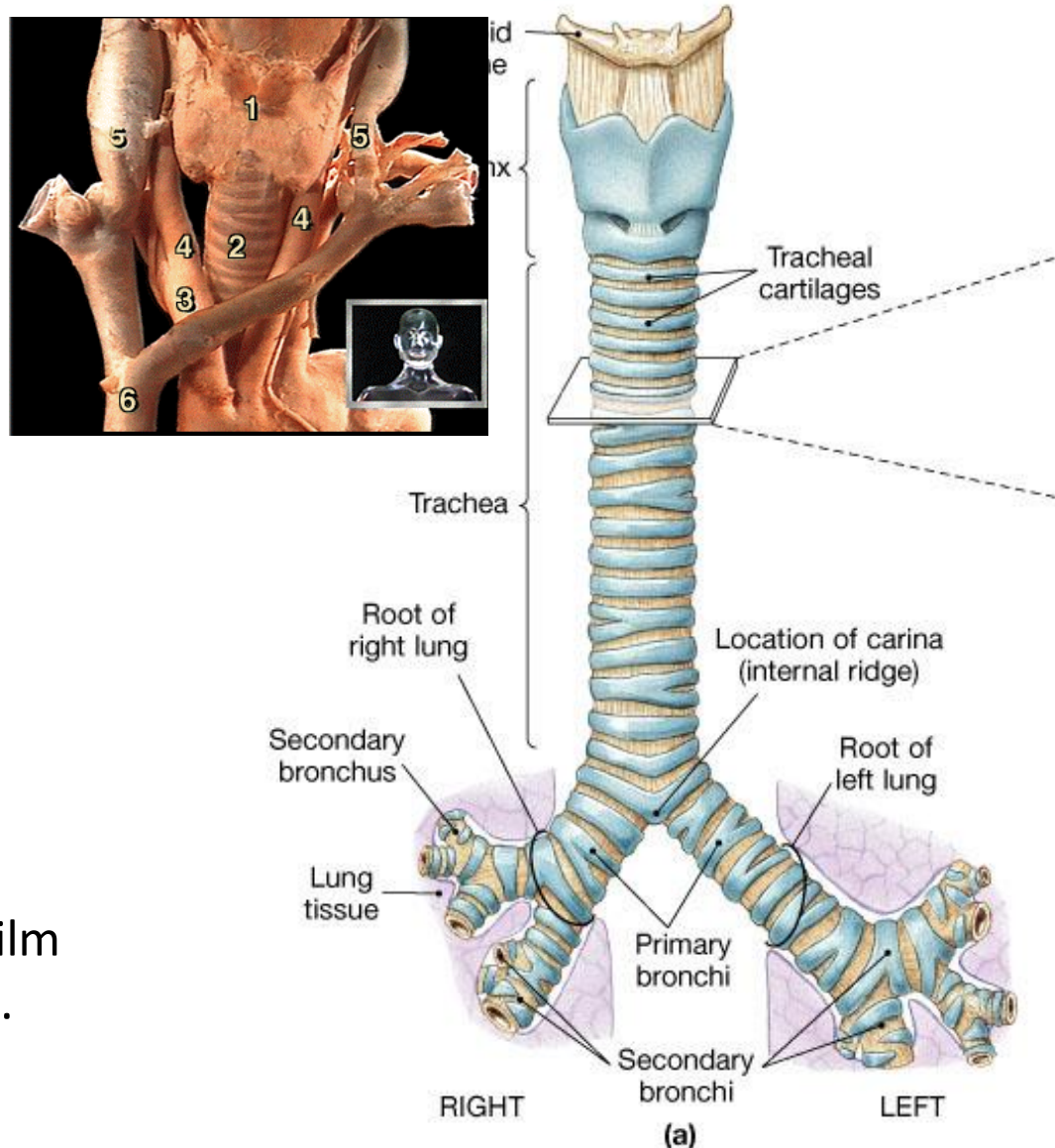
(nincs gázcseré csak passzázs)

**melegít, hűt, nedvesít és tisztít**

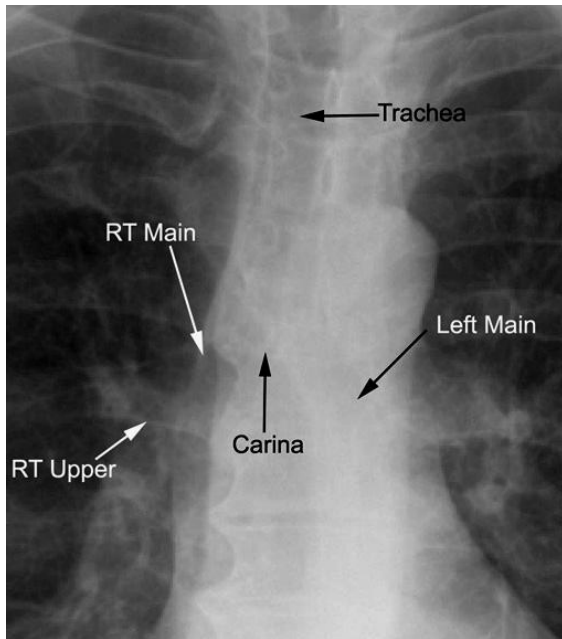
Kehelysejtek, mirigyek - nyálkafilm

**Kinociliumok** kifelé csapkodnak.

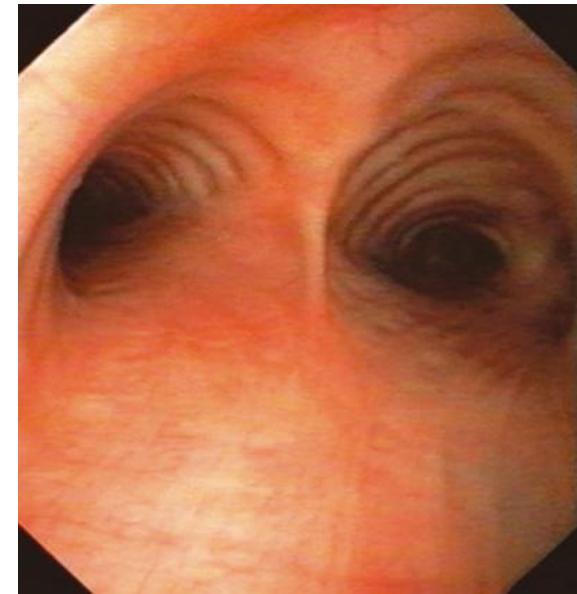
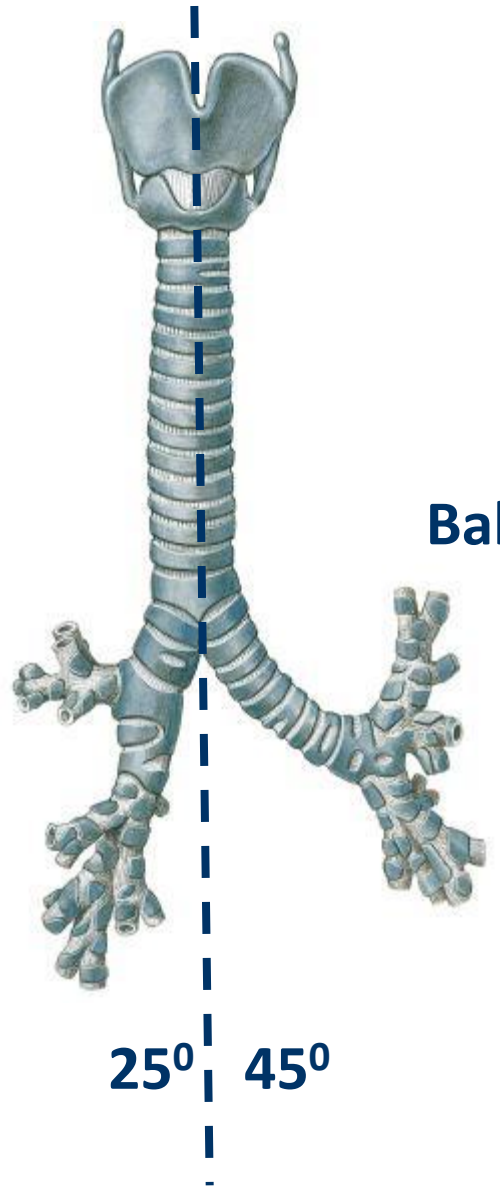
cca **15 mm / perc**



# CARINA TRACHEAE

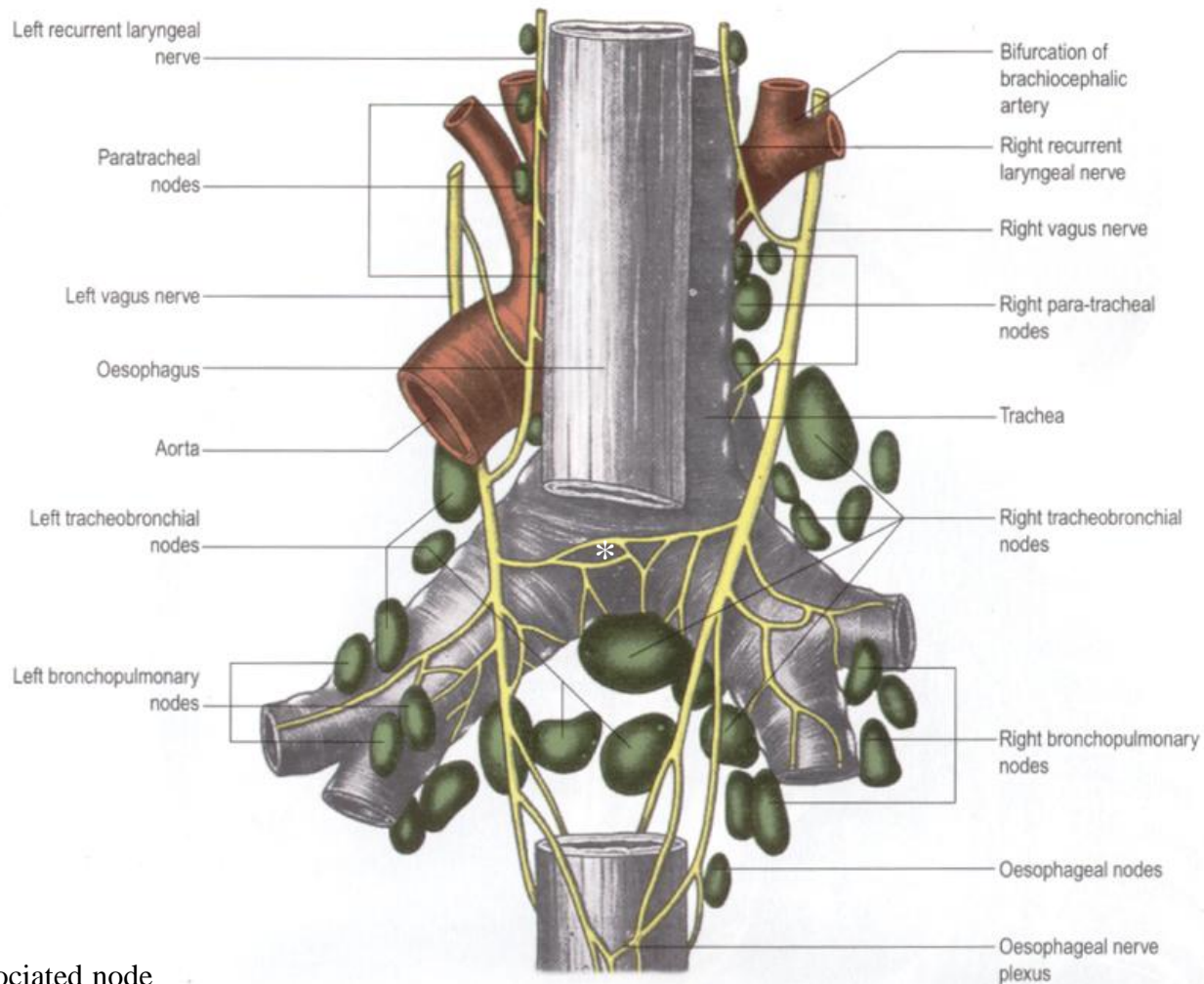


**Jobb**



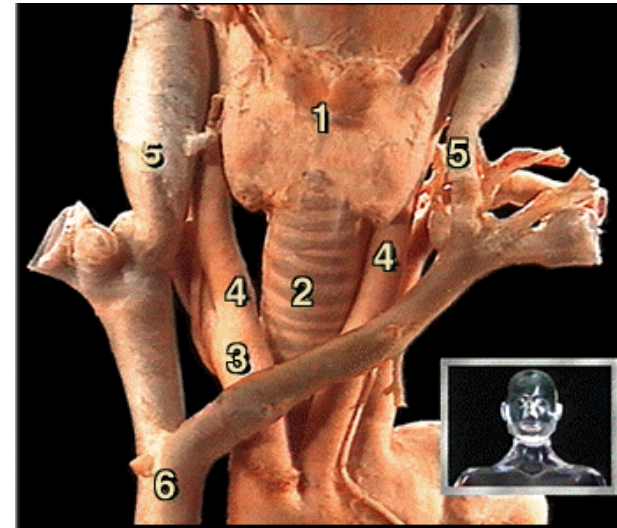
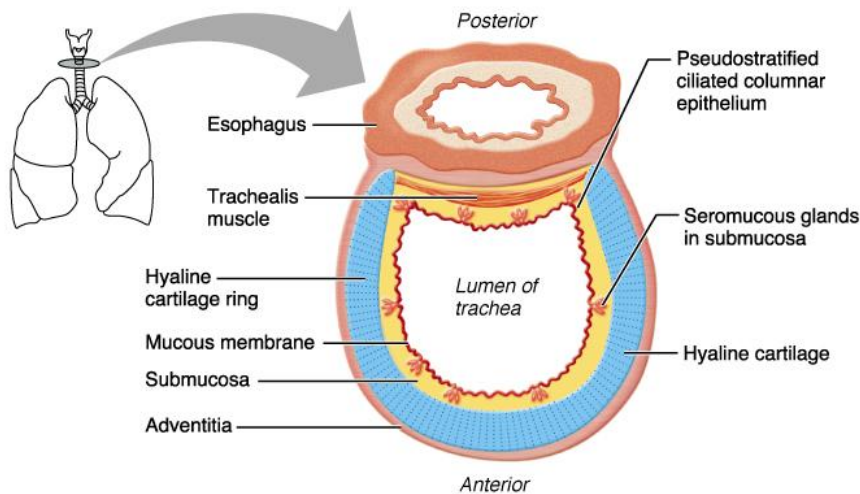


# TRACHEALIS, TRACHEOBRONCHIALIS NYIROKCSOMÓK



\* Carina-associated node

# TRACHEA – TOPOGRAPHIA



Oesophagus

Glandula thyroidea

(és nyaki fasciák + izmok + sternum)

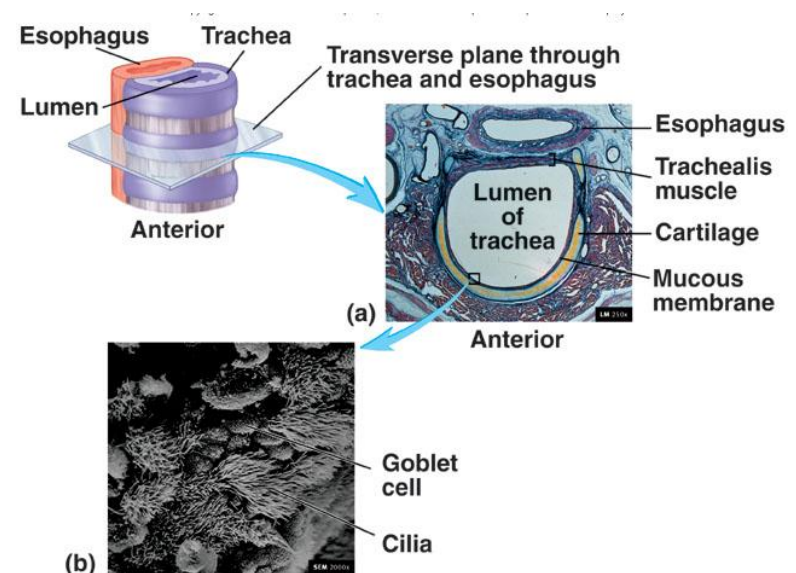
Vagina carotica (*Fossa scalenotrachealis*)

Venák

Arcus aortae és ágai

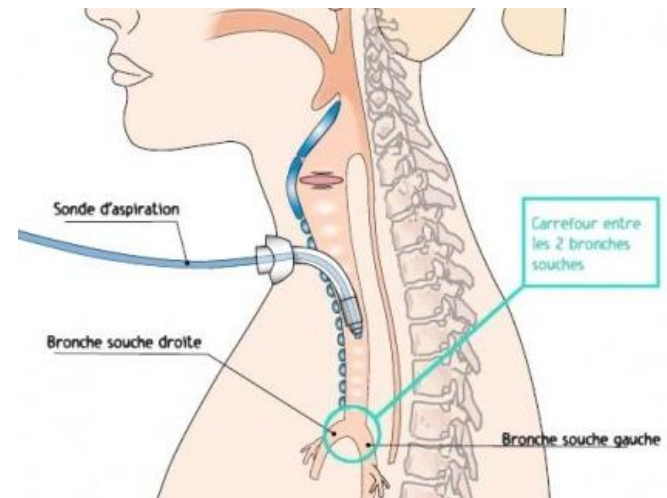
N. vagus, (n. laryngeus recurrens !)

Pleura

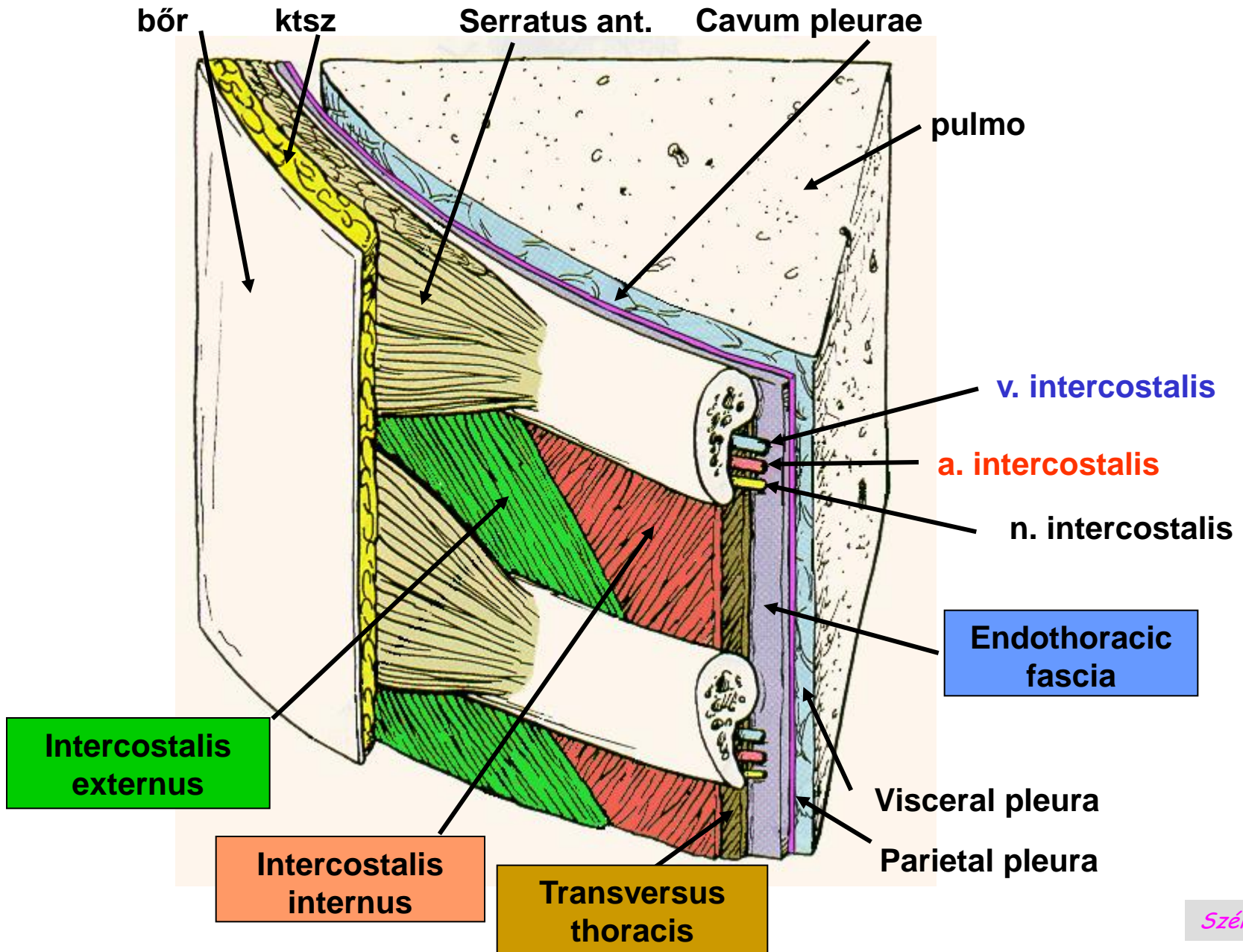


# TRACHEOTOMIA, TRACHEOSTOMA

**Localis anaesthesia.** Hosszanti vagy haránt metszés a gyűrűporc alatt. A linea albán élesen behatolva szétválasztjuk a lapos nyelv alatti izmokat (mm. sternohyoideus, mm. sternothyrohyoideus) és elpreparáljuk őket a pajzsmirigyektől (lateralisan 2 db négyágú kosaras sebészeti kampó). A pajzsmirigy isthmusát Kocher-féle érfogók között átvágjuk, lekötjük a lobus pyramidalist. A pajzsmirigy sebszéleit „8”-as öltésekkel, felszívódó fonállal aláöltjük. **Bose metszés** (Bose szalag = a pajzsmirigyet köti össze a trachea felső szélével). Az isthmus ezáltal a tracheáról lefelé tolhatóvá válik (**Stiel-tupfer**). A pajzsporcot horoggal cranial irányba kampózzuk, caudal irányba Desmarres kanál behelyezése. A trachea most már szabadon fekszik előttünk. Szükség szerint a tracheába érzéstelenítő oldatot fecskendezünk. **A tracheát a 2.-3. porc között nyitjuk meg** (15-ös szike + horgas csipesz vagy Hartmann-féle conchotom), melybe gégekanül vagy ballonos tubus/kanül kerül. **Az izmokat felszívódó öltésekkel egyesítjük, majd a nyakat rétegesen zárjuk. Ügyelni kell arra, hogy ne alkalmazzunk szoros öltéseket a bőr alatti emphysema kialakulásának elkerülése érdekében.** Fedőkötés.



# A MELLKASFAL ALKOTÓELEMEI



# A PLEURA

## Savós hártya

### Pleura Parietalis

*Pleura costalis*

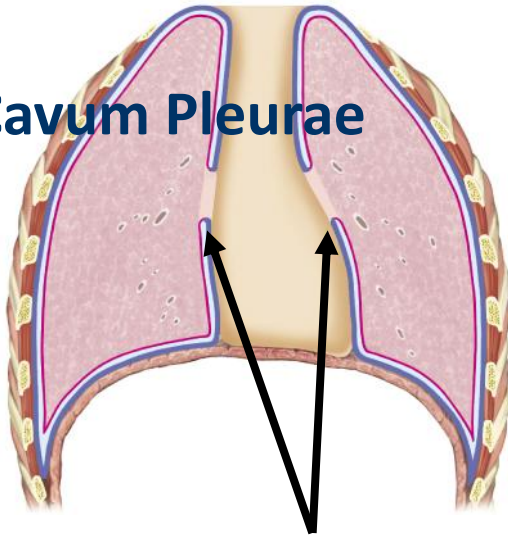
*Pleura mediastinalis*

*Pleura diaphragmatica*

*Cupula pleurae*

### Pleura Visceralis

### Cavum Pleurae



**Ligamentum pulmonale**

(frontalis helyzetű kettőzet)

## VÉRELLÁTÁS

Pleura parietalis : aa. intercostales, a. thoracica lateralis,

Pleura visceralis: aa., vv. bronchiales

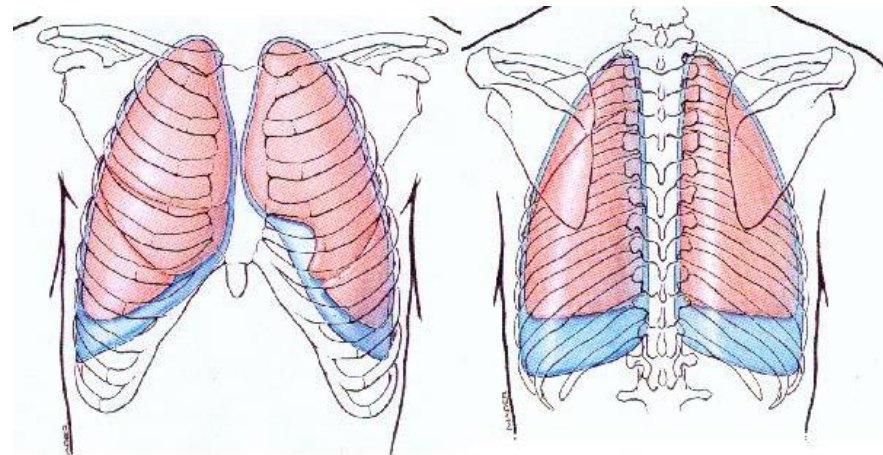
## BEIDEGZÉS

Pleura parietalis: érző (fájdalom)

Pleura costalis: nn. intercostales;

Pleura mediastinalis, pleura diaphragmatica: n. phrenicus

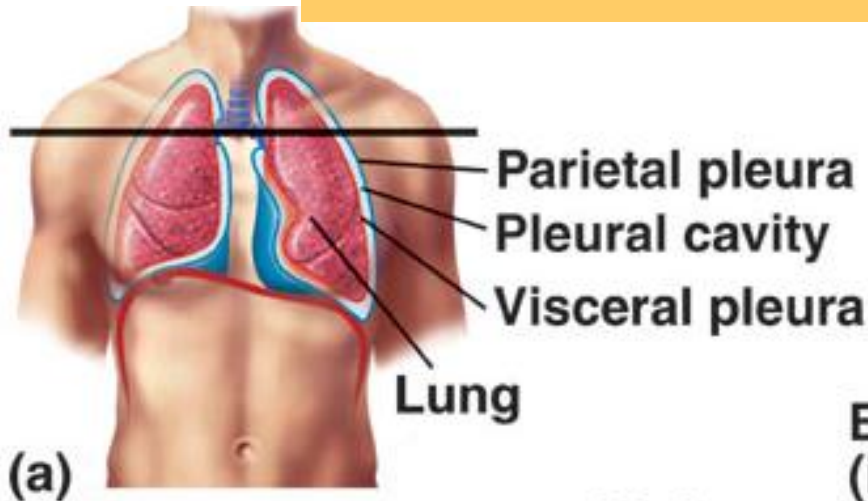
Pleura visceralis: (nincs fájdalomérzés)



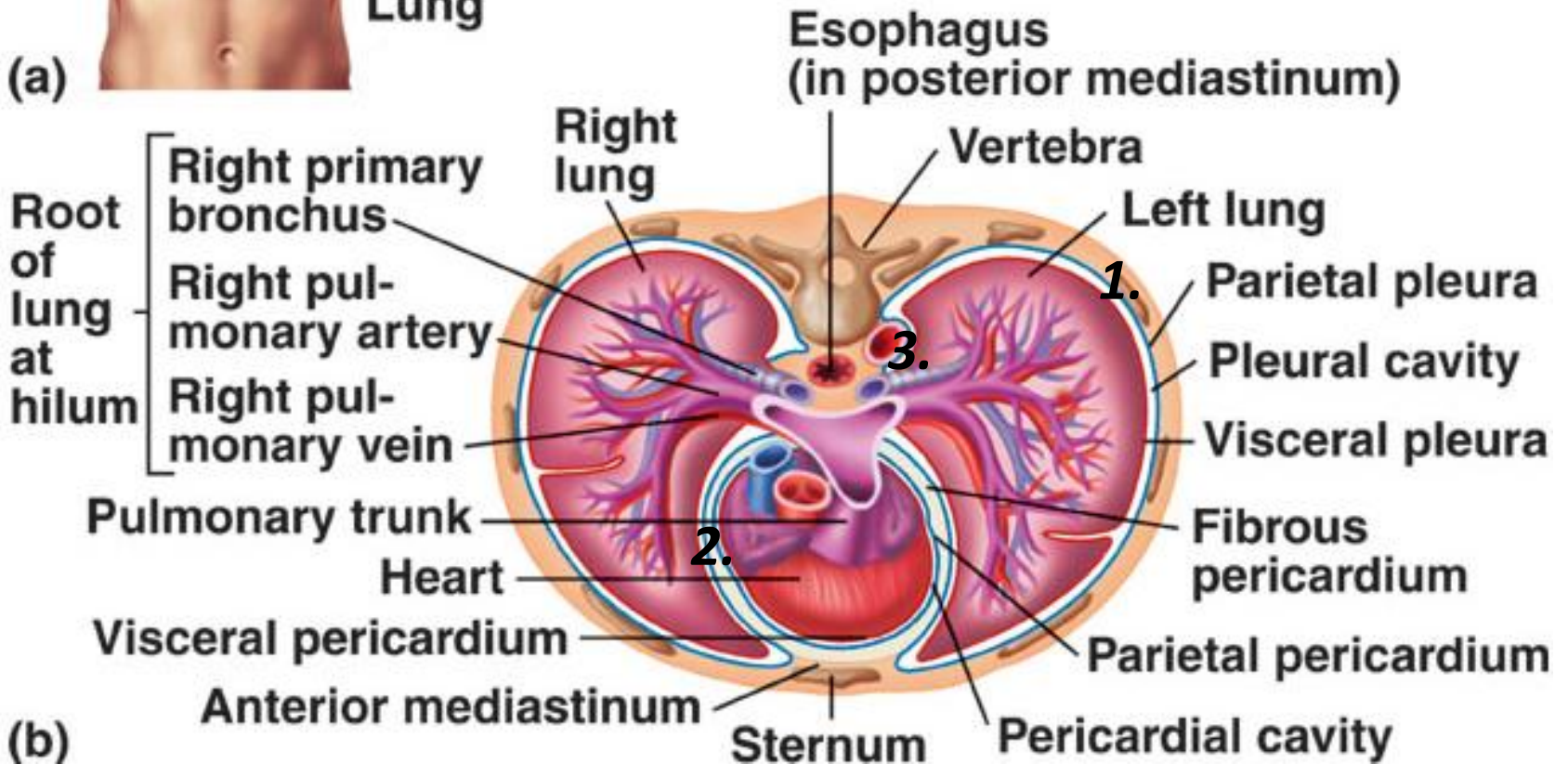
area interpleurica sup. (trigonum thymicum)

area interpleurica inf. (trigonum pericardiacum)

# A PLEURAŰ RECESSUSAI



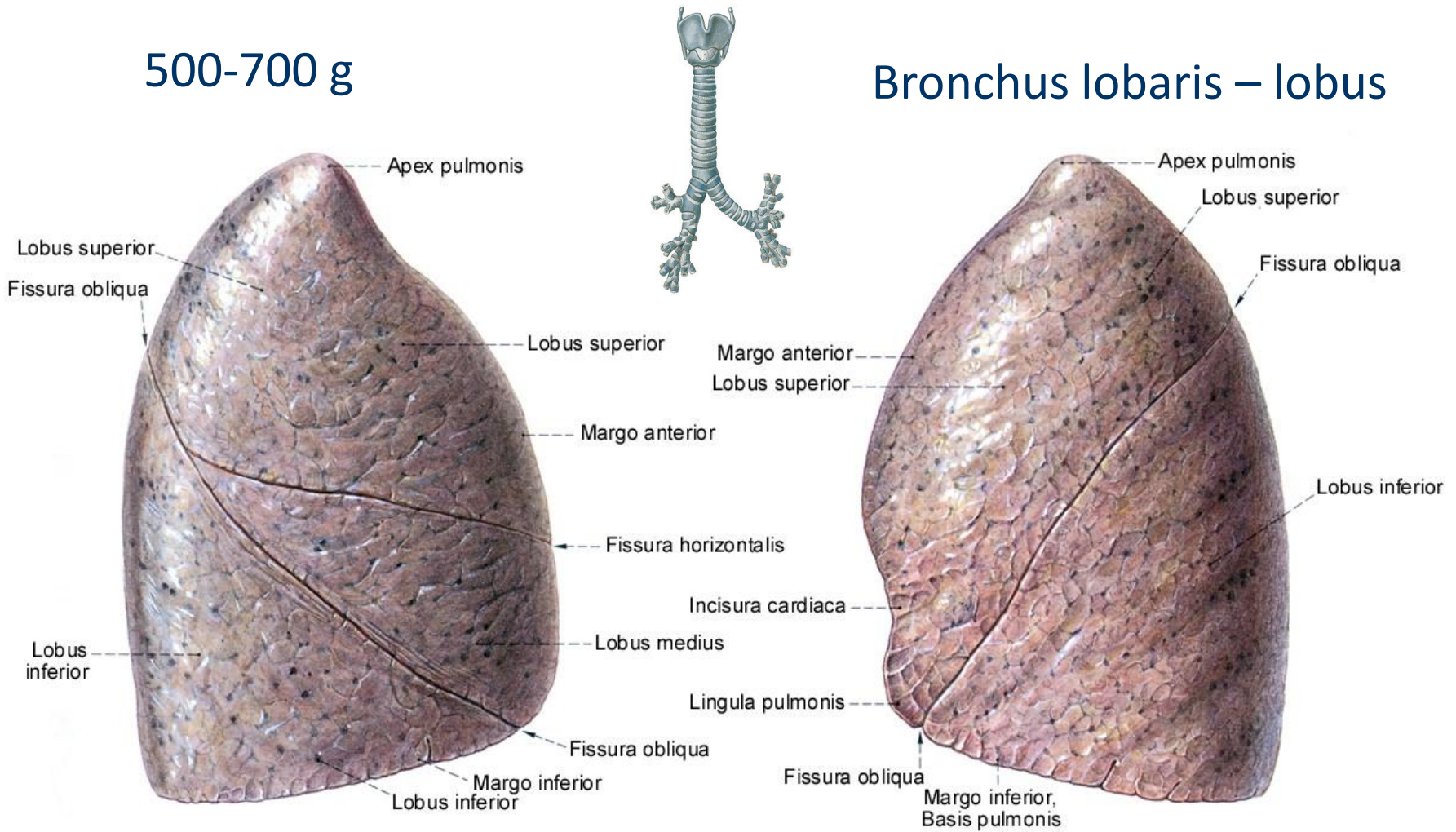
1. *COSTODIAPHRAGMATICUS*
2. *COSTOMEDIASTINALIS*
3. *DIAPHRAGMatico-MEDIASTINALIS*



# PULMO

500-700 g

Bronchus lobaris – lobus



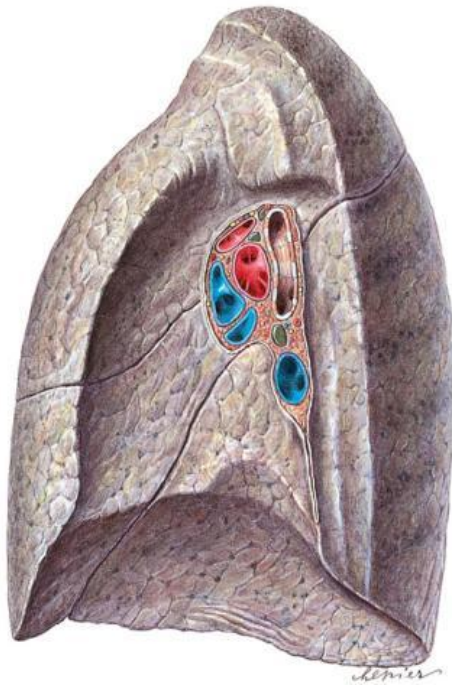
Pulmo dexter  
3 lobus

Pulmo sinister  
2 lobus

# HILUM ET RADIX

B  
A  
V

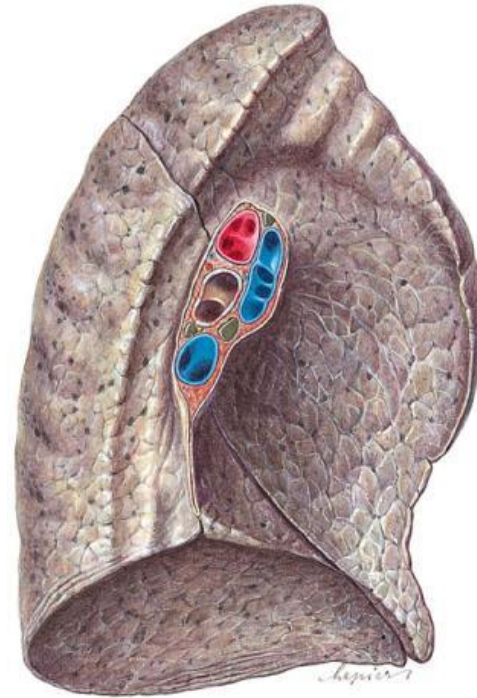
Ant.  
←



Pulmo dexter

(V)  
A  
B  
V

Ant.  
→



Pulmo sinister

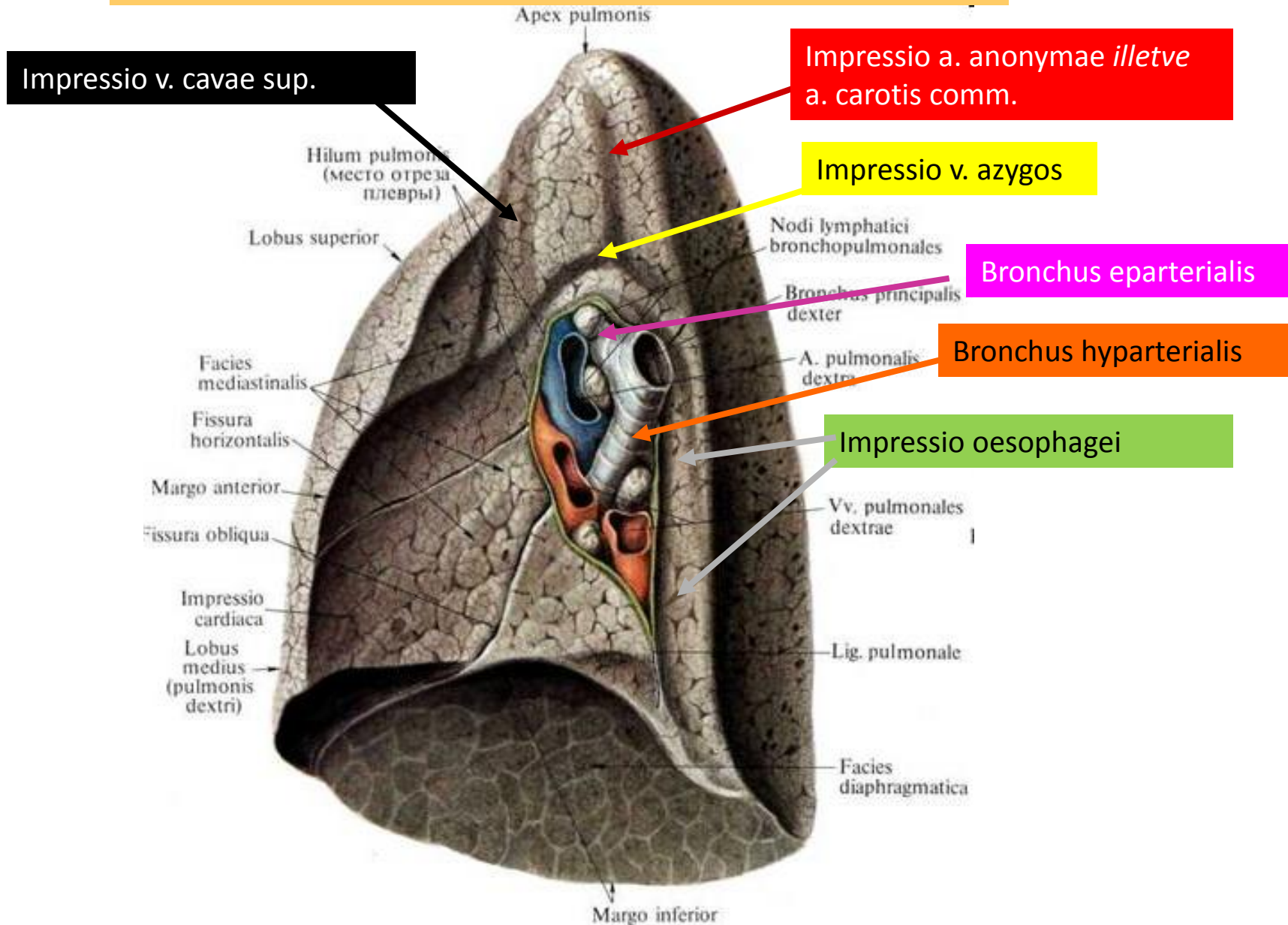
**Bronchus principalis halyzete**

eparterialis

hyarterialis



# JOBB TÜDŐ – TOPOGRAPHIA

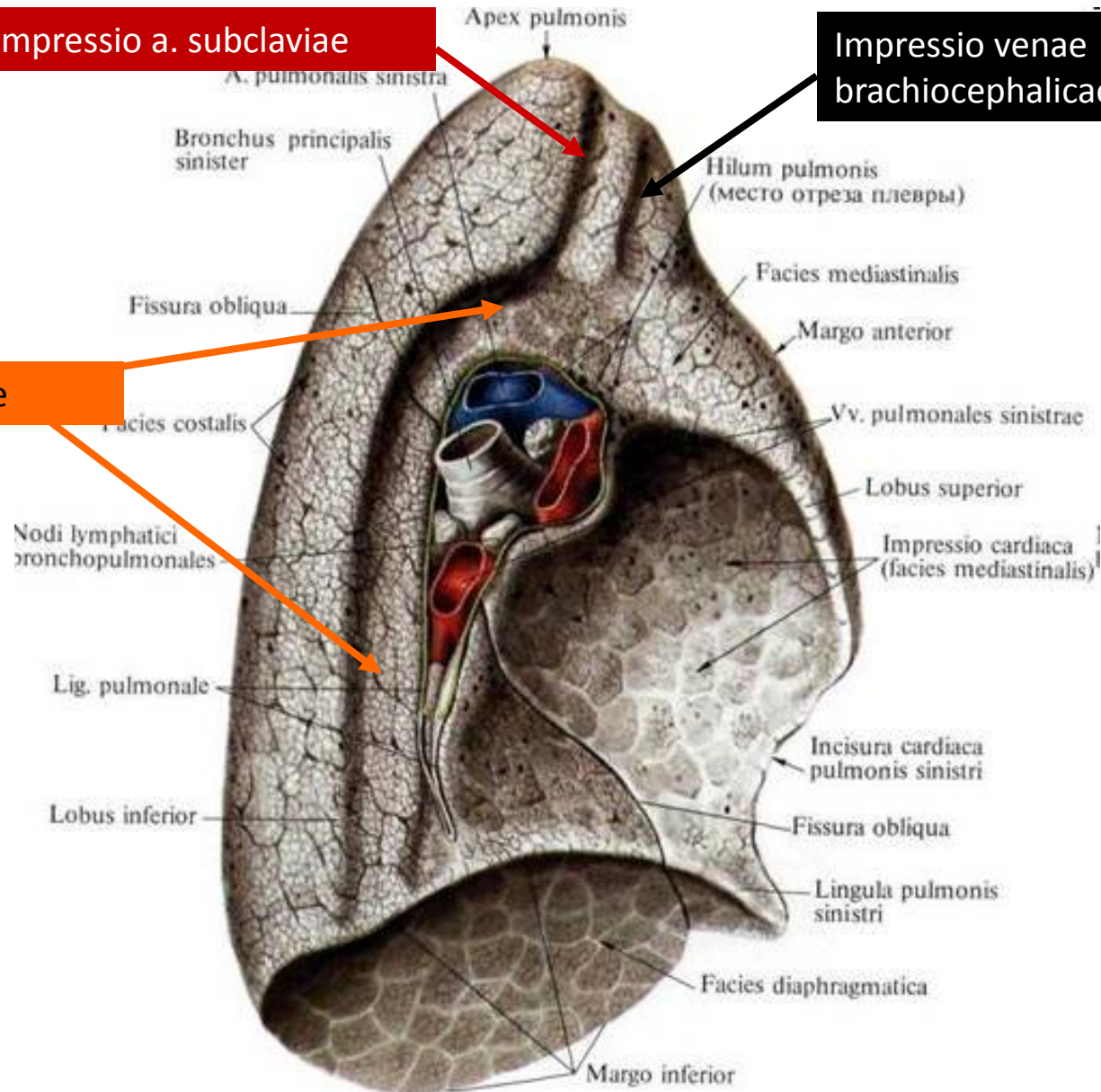


# BAL TÜDŐ – TOPOGRAPHIA

Impressio a. subclaviae

Impressio venae  
brachiocephalicae

Impressio aortae

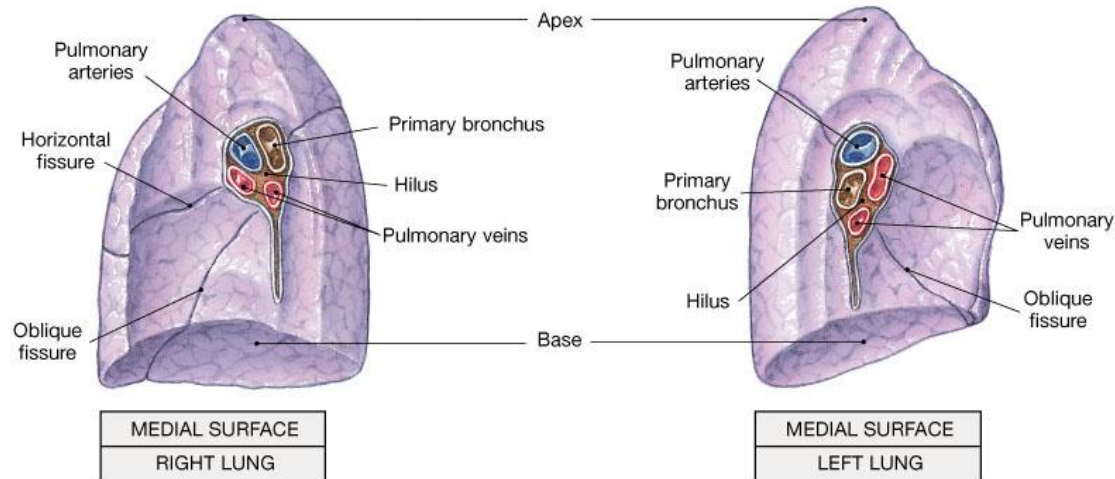
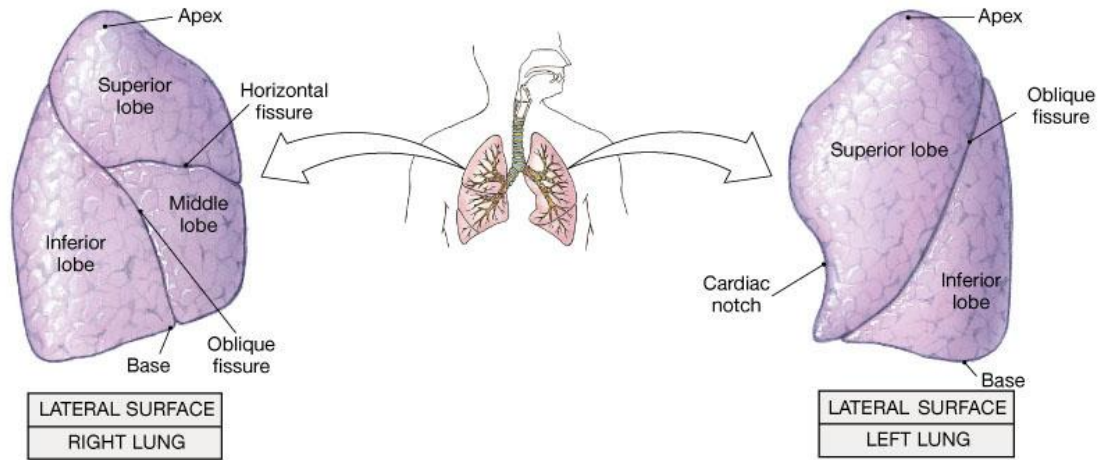


# A TÜDŐK LEÍRÁSA

- **RADIX**
- **Facies costalis**
- **Apex**
- **Basis (Fac. diaphragmatica)**
- **Hilum (Fac. mediastinalis)**

- **PULMO SINISTER**
- **Incisura Cardiaca**
- **Fissura Obliqua**

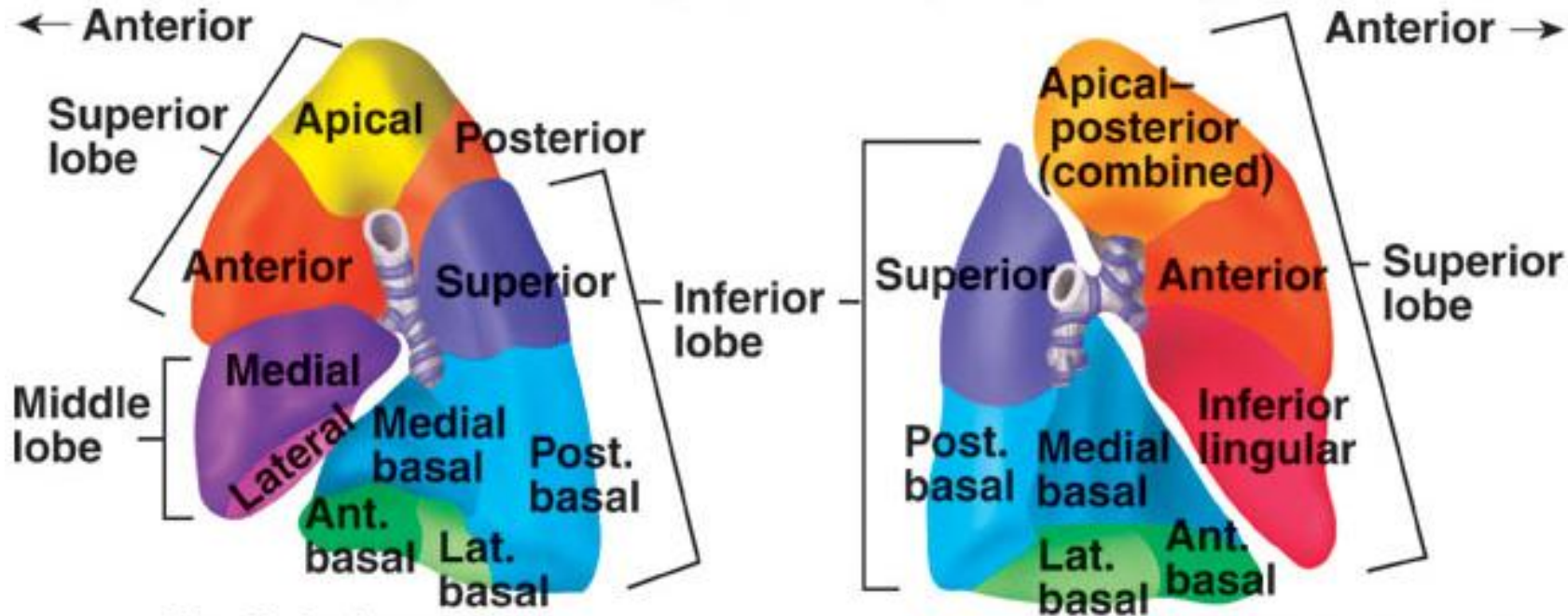
- **PULMO DEXTER**
- **Fissura Obliqua**
- **Fissura Horizontalis**
- **LOBI**



## Segmentum Bronchopulmonale (10 – 10)

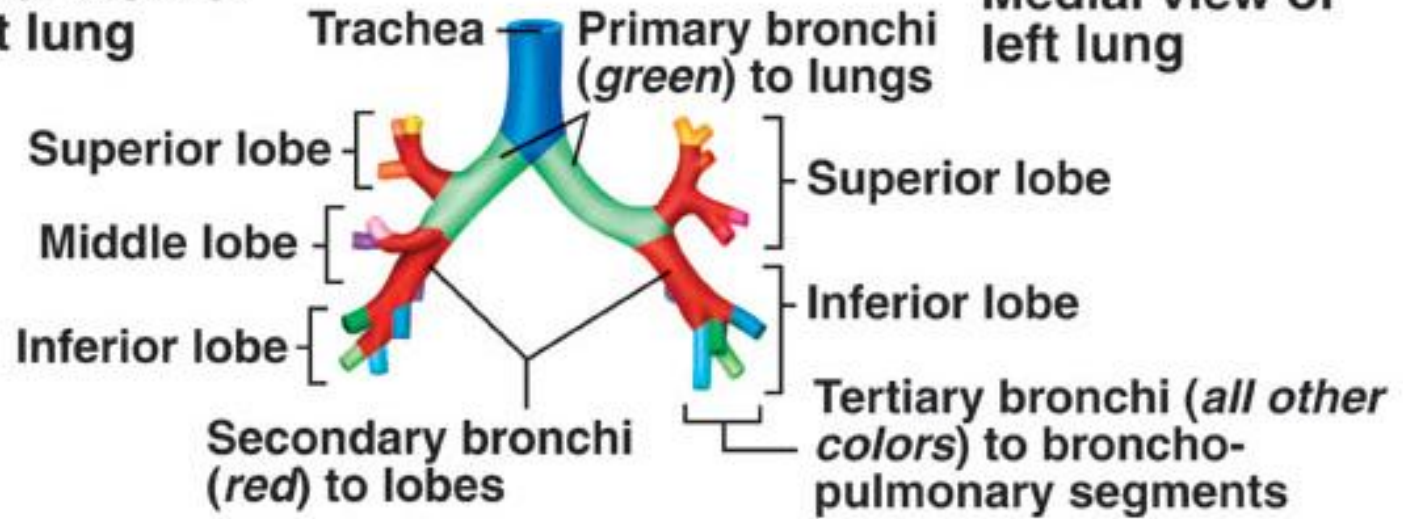
- **Lobuli**
- **Stroma (elasztikus ktsz)**

# TÜDŐSEGMENTUMOK

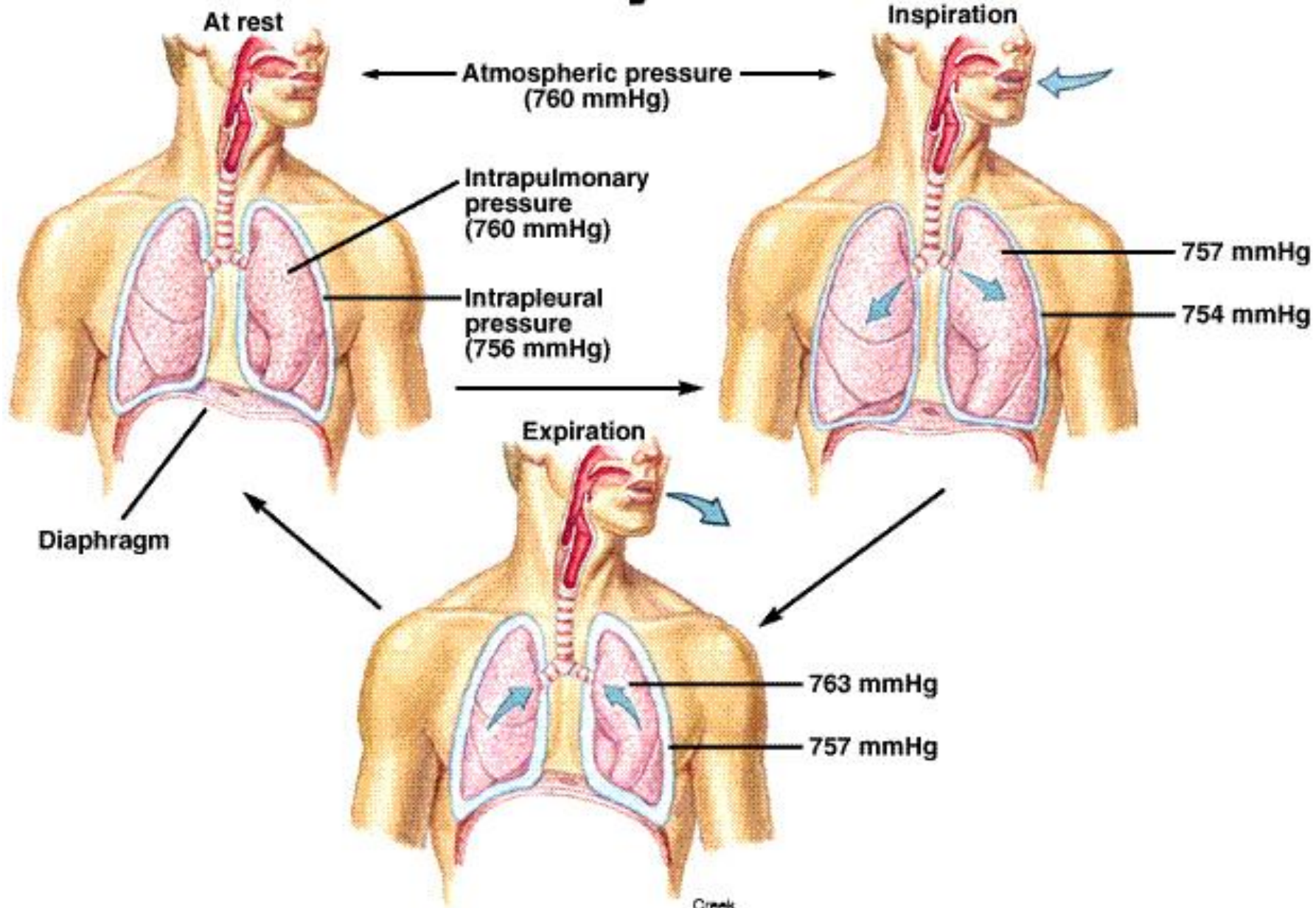


Medial view of right lung

Medial view of left lung



# LÉGZÉS



# BESZÉLNI VAGY LÉLEGEZNI 😊

- LÉGZÉS

- orr
- belégzés 40% (idő)
- kilégzés 60%
- 10 % Vitalkapacitás
- Thorax és diaphragma izmai

kilégzés

belégzés

- BESZÉD

- száj
- belégzés 10% (idő)
- kilégzés 90%
- 20-25 % Vitalkapacitás
- Thorakoabdominalis izomzat

kilégzés

be

**QR CODE**



# Radiological findings from 81 patients with COVID-19 pneumonia in Wuhan, China: a descriptive study

Heshui Shi, Xiaoyu Han, Nanchuan Jiang, Yukun Cao, Osamah Alwalid, Jin Gu, et al.

Published: February 24, 2020 DOI: [https://doi.org/10.1016/S1473-3099\(20\)30086-4](https://doi.org/10.1016/S1473-3099(20)30086-4)

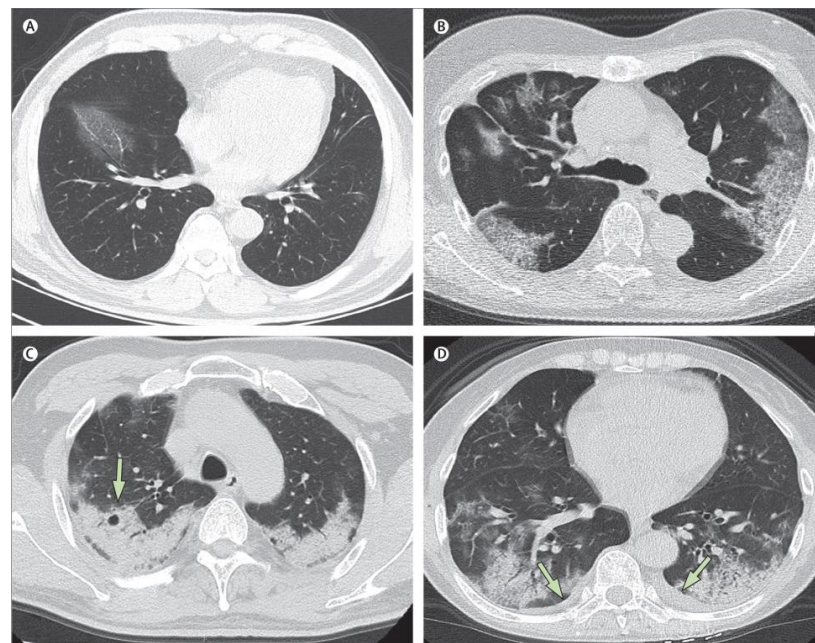
Patients were assigned to groups on the basis of time between symptom onset and first CT scan: 15 (19%) patients (including health-care workers who had had close contact with patients) were assigned to group 1, 21 (26%) to group 2, 30 (37%) to group 3, and 15 (19%) to group 4.

The most common symptoms at onset were **fever** (59 [73%] patients) and **dry cough** (48 [59%]).

Other *non-specific symptoms included dizziness* (2 [2%] patients), *diarrhoea* (3 [4%]), *vomiting* (4 [5%]), *headache* (5 [6%]), and *generalised weakness* (7 [9%]).

Although all lung segments can be involved, there was a **slight predilection for the right lower lobe** (225 (27%) of 849 affected segments among all patients).

- (A) 56-year-old man, day 3 after symptom onset: **focal ground-glass opacity** associated with **smooth interlobular and intralobular septal thickening** in the right lower lobes.
- (B) 74-year-old woman, day 10 after symptom onset: bilateral, **peripheral ground-glass opacity** associated with smooth interlobular and intralobular septal thickening (*crazy-paving pattern*).
- (C) 61-year-old woman, day 20 after symptom onset: bilateral and **peripheral predominant consolidation pattern with a round cystic change** internally (arrow).
- (D) 63-year-old woman, day 17 after symptom onset: bilateral, **peripheral mixed pattern** associated with air bronchograms in both lower and upper lobes, with a small amount of **pleural effusion** (arrows).





Please cite this article as: **Pulmonary pathology of early phase 2019 novel coronavirus (COVID-19) pneumonia in two patients with lung cancer,**

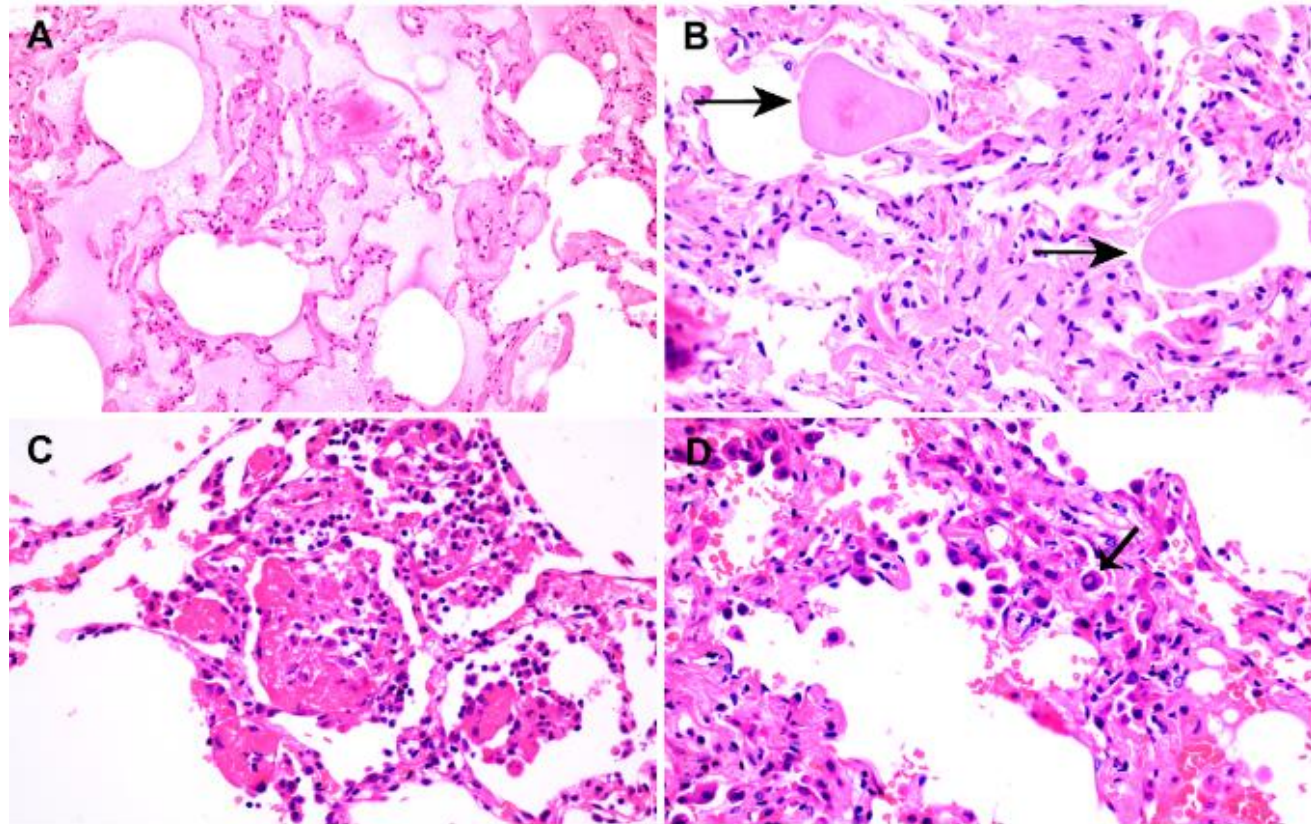
Tian S, Hu W, Niu L, Liu H, Xu H, Xiao S-Y,

*Journal of Thoracic Oncology* (2020), doi: <https://doi.org/10.1016/j.jtho.2020.02.010>.

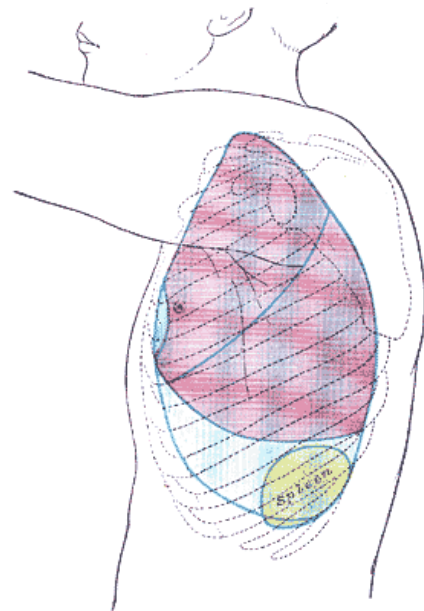
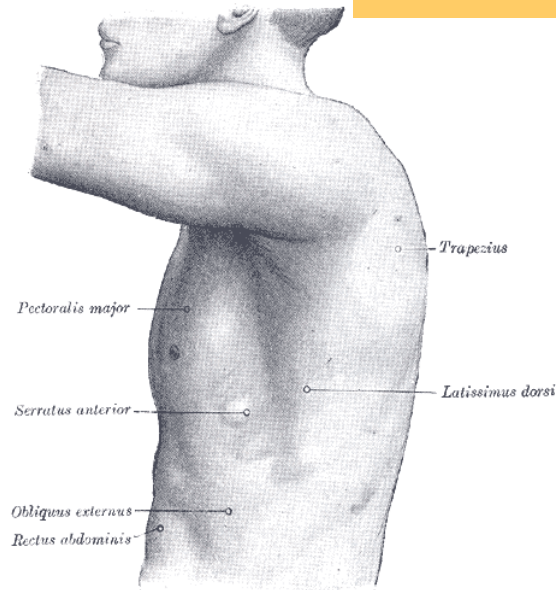
The article describes two patients who recently underwent lung lobectomies for adenocarcinoma and were retrospectively found to have had COVID-19 at the time of surgery. Pathologic examinations revealed that, apart from the tumors, the lungs of both patients exhibited *edema, proteinaceous exudate, focal reactive hyperplasia of pneumocytes with patchy inflammatory cellular infiltration, and multinucleated giant cells. Fibroblastic plugs were noted in airspaces.*

**Histological changes from case 1**

- A. Proteinaceous exudates in alveolar spaces, with granules;
- B. Scattered large protein globules (arrows);
- C. Intraalveolar fibrin with early organization, with mononuclear inflammatory cells and multinucleated giant cells ;
- D. Hyperplastic pneumocytes, some with suspected viral inclusions (arrow).

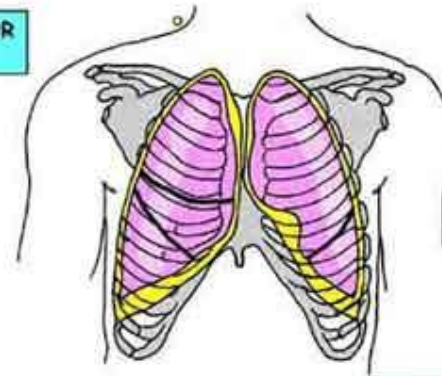


# A TÜDŐ VETÜLETEI



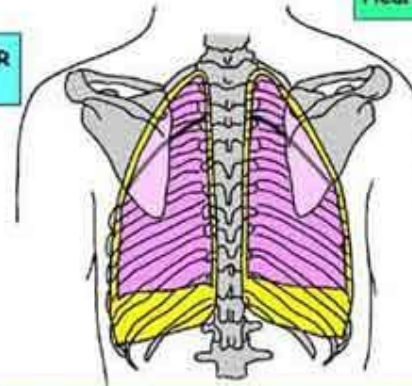
## PLEURAL AND LUNG SURFACE MARKINGS

ANTERIOR VIEW



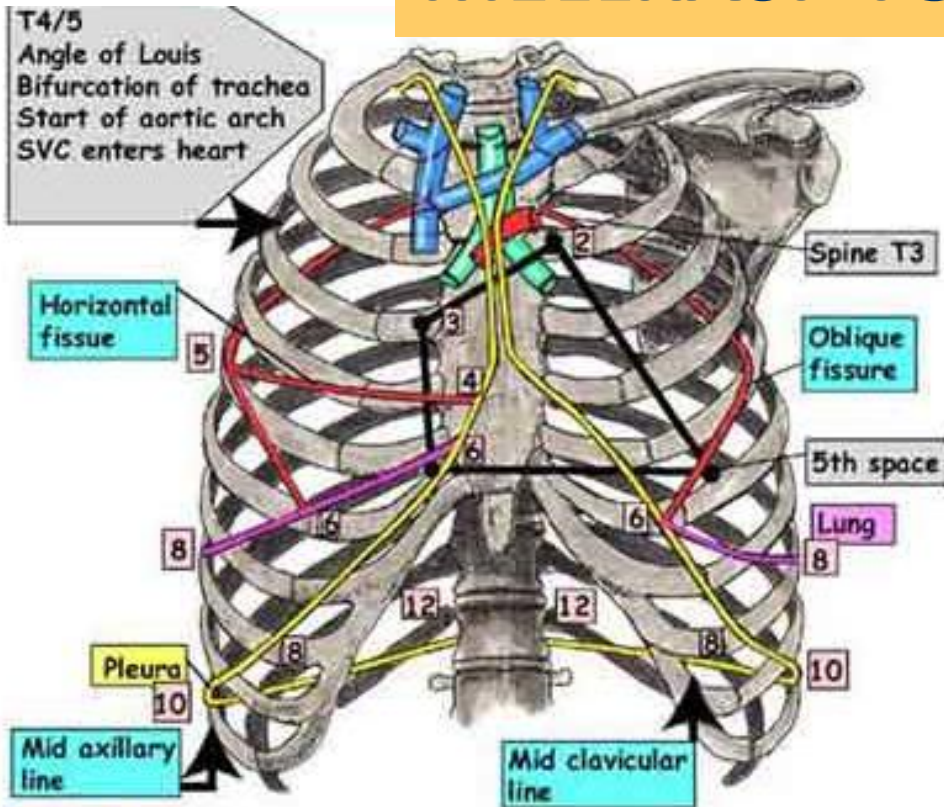
Lung is purple.  
Pleura is yellow

POSTERIOR VIEW



Note that the pleura extends just below the 12th rib posteriorly. This is important in approaching the kidney surgically from behind

# MELLKASI TOPOGRAPHIA



**Pleura** Starts above middle of medial third of clavicle  
Meet at rib 2. Diverge at rib 4 (left more than right)  
Right is still parasternal at rib 6. Both rib 8 in mid clavicular line, rib 10 in mid axillary line and rib 12 posteriorly  
(Mnemonic - 2-4-6-8-10-12)

**Lung** 2 spaces less than pleura below 6th rib

**Heart** 2nd left rib to 3rd right rib to 6th right rib (all parasternal)  
to 5th intercostal space midclavicular line (9cm from midline)  
(Mnemonic 2-3-6-5 1/2)

**Oblique fissure** Spine of T3 posteriorly to 6th rib anteriorly (medial border of abducted scapula)

**Horizontal fissure** 4th rib/costal cartilage anteriorly to 5th rib in mid axillary line (Mnemonic for both fissures 3-6-4-5)

**PLEURA**

**TÜDŐ**

**LEBENYHATÁROK**

**BIFURCATIO TRACHEAE**

**PERICARDIUM**

**ARCUS AORTAE**

**NAGY VÉNÁK (V. CAVA SUP.,  
VV. BRACHIOCEPHALICAE)**

# MEDIASTINUM

## Elválasztó képlet a bifurcatio tracheae

### MEDIASTINUM ANTERIUS

#### Mediastinum cardiacum

szív és szívburok

n. phrenicus, a, v pericardiophrenica

#### Mediastinum supracardiacum

corpus adiposum retrosternale

v. cava sup. ágai

aortaív és ágrendszere

### MEDIASTINUM POSTERIUS

Oesophagus

N. vagus

N. laryngeus recurrens

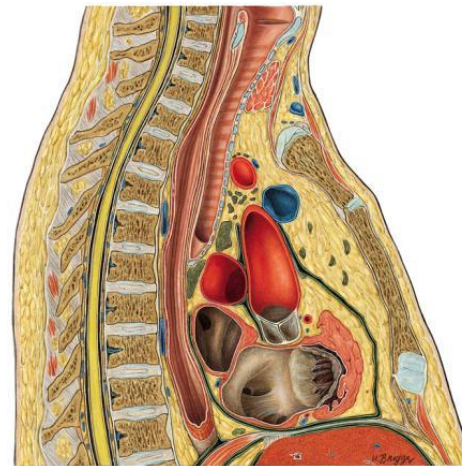
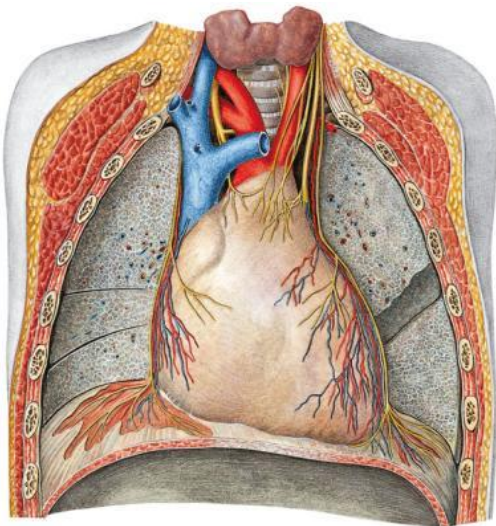
Aorta (+ páros ágak)

Duct. thoracicus

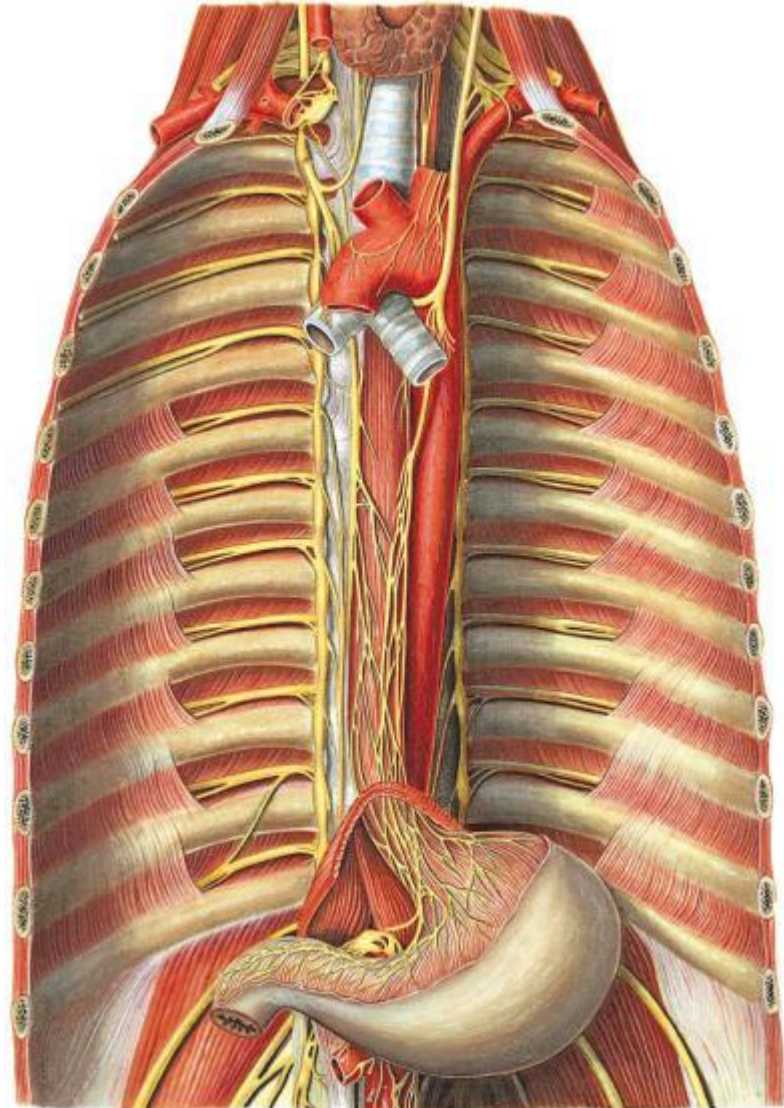
V. Azygos (+ vénái)

V. Hemiazygos et v. h.a. accessoria

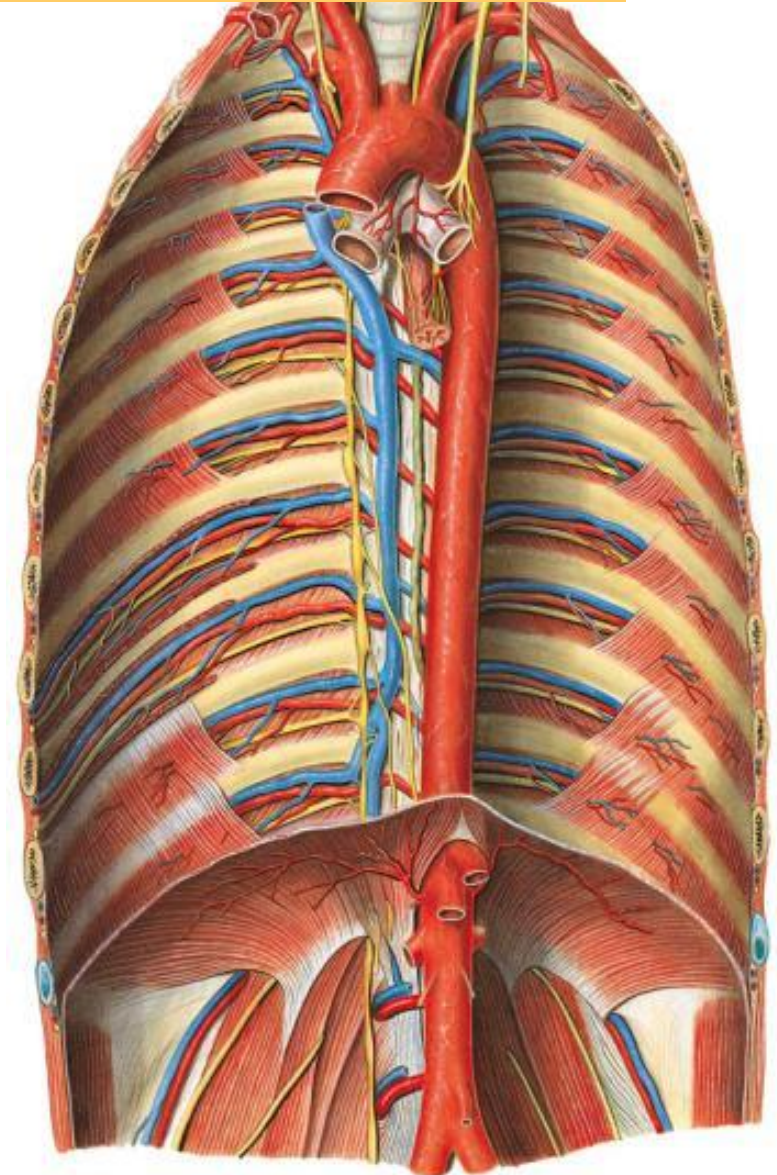
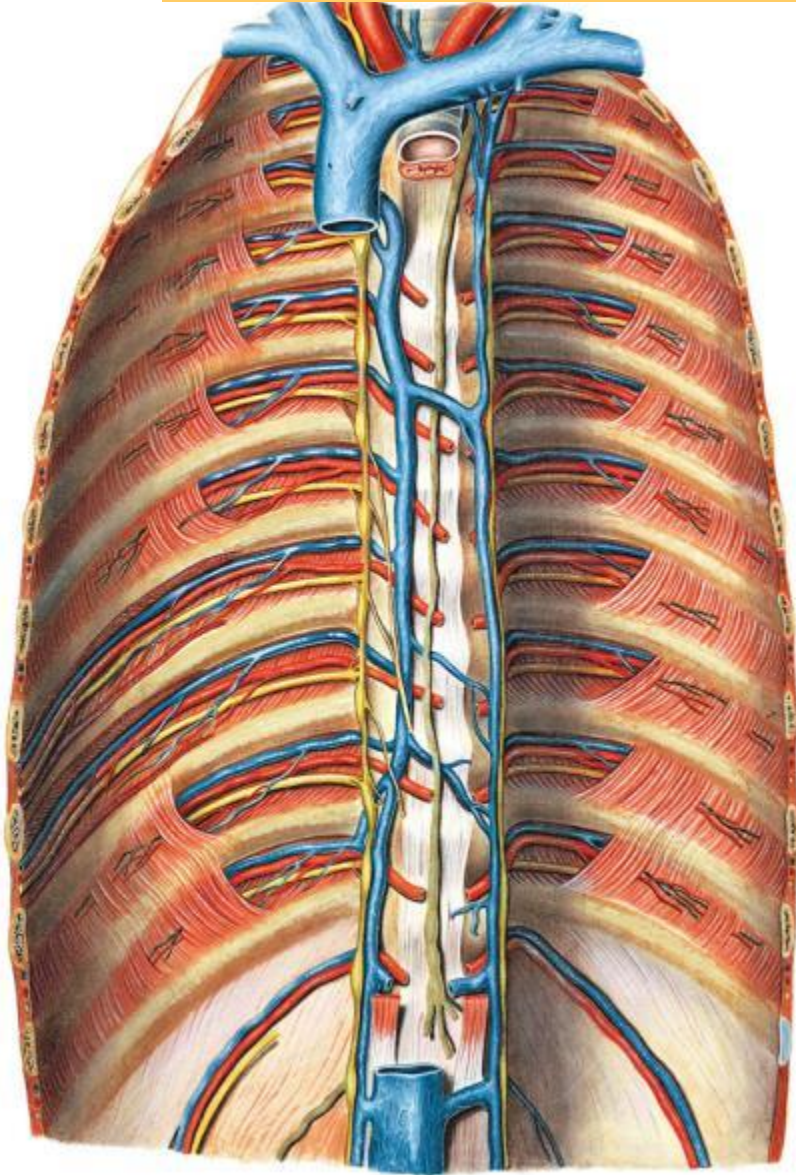
Truncus sympaticus (nn. Splanchnici)



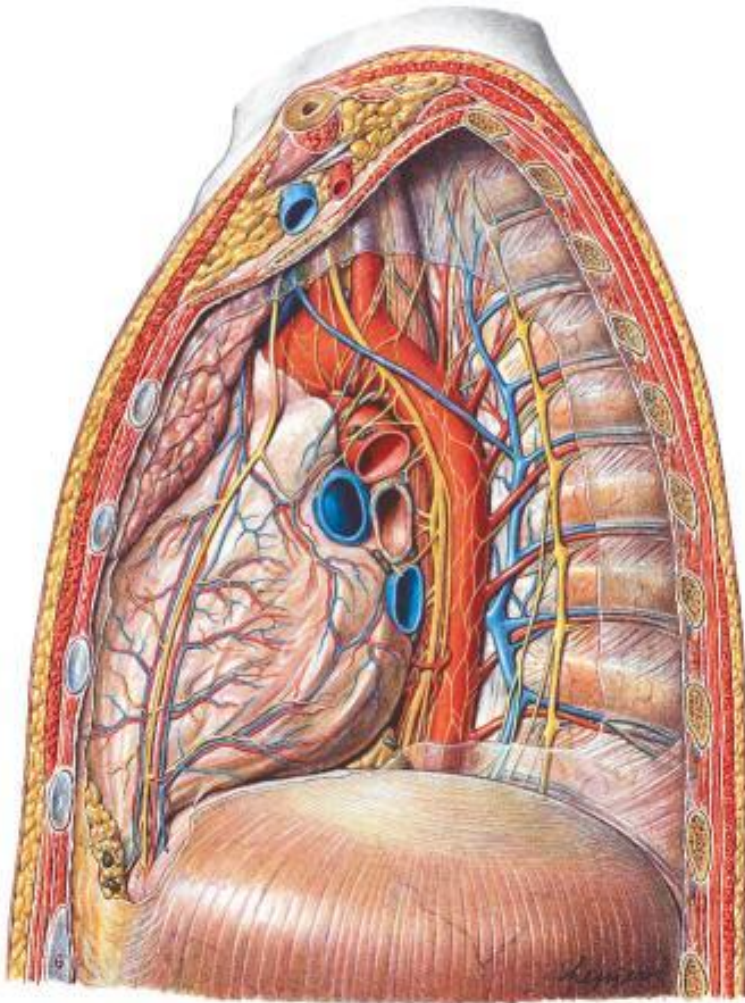
# MEDIASTINUM POSTERIUS 1



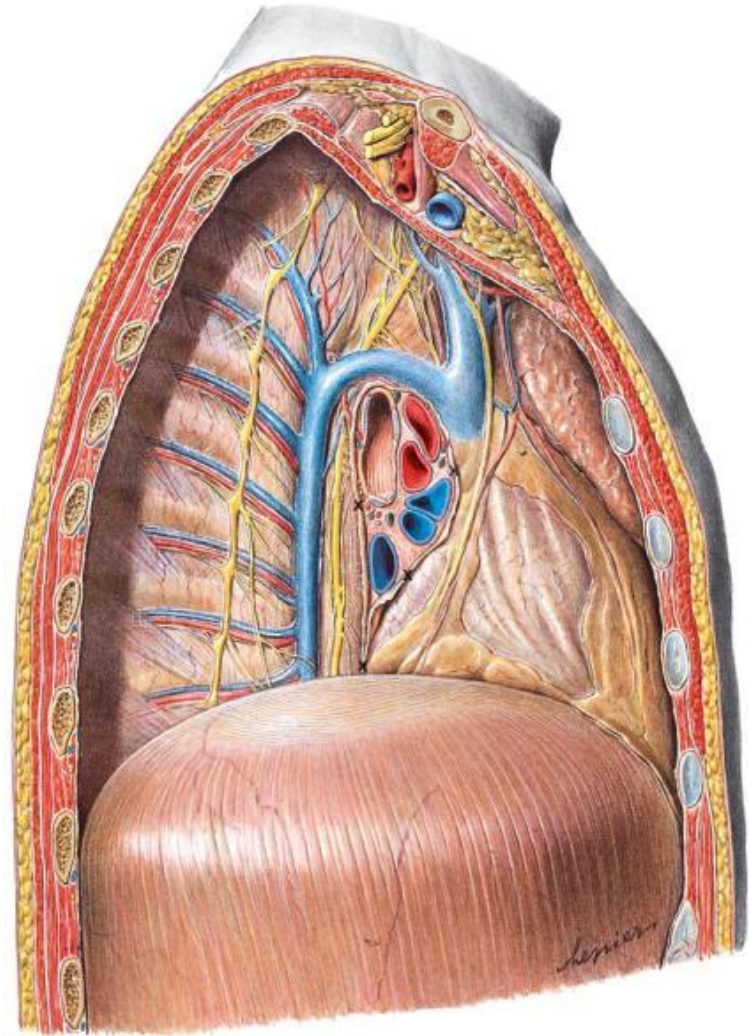
# MEDIASTINUM POSTERIUS 2



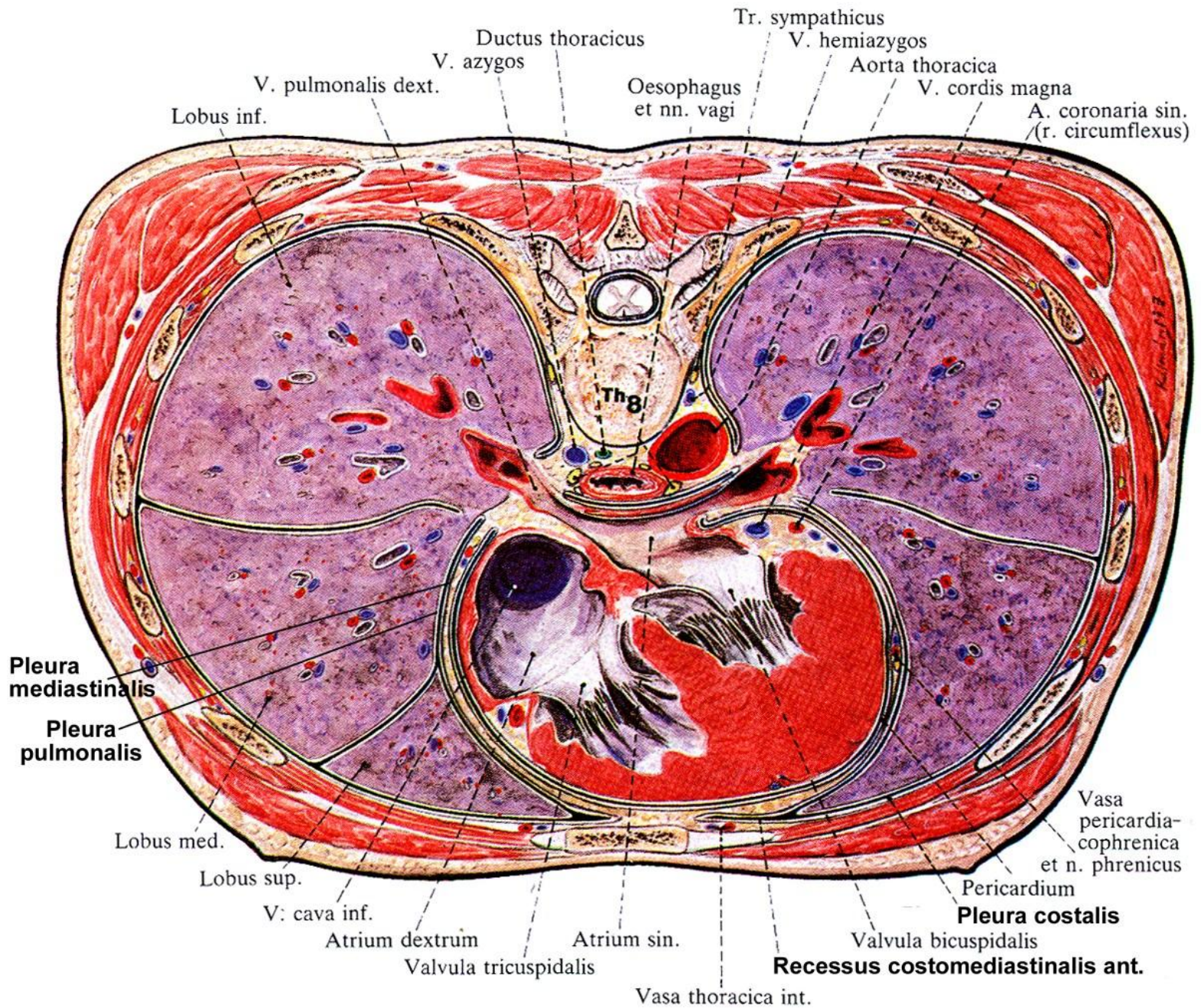
# MEDIASTINUM POSTERIUS 3



bal



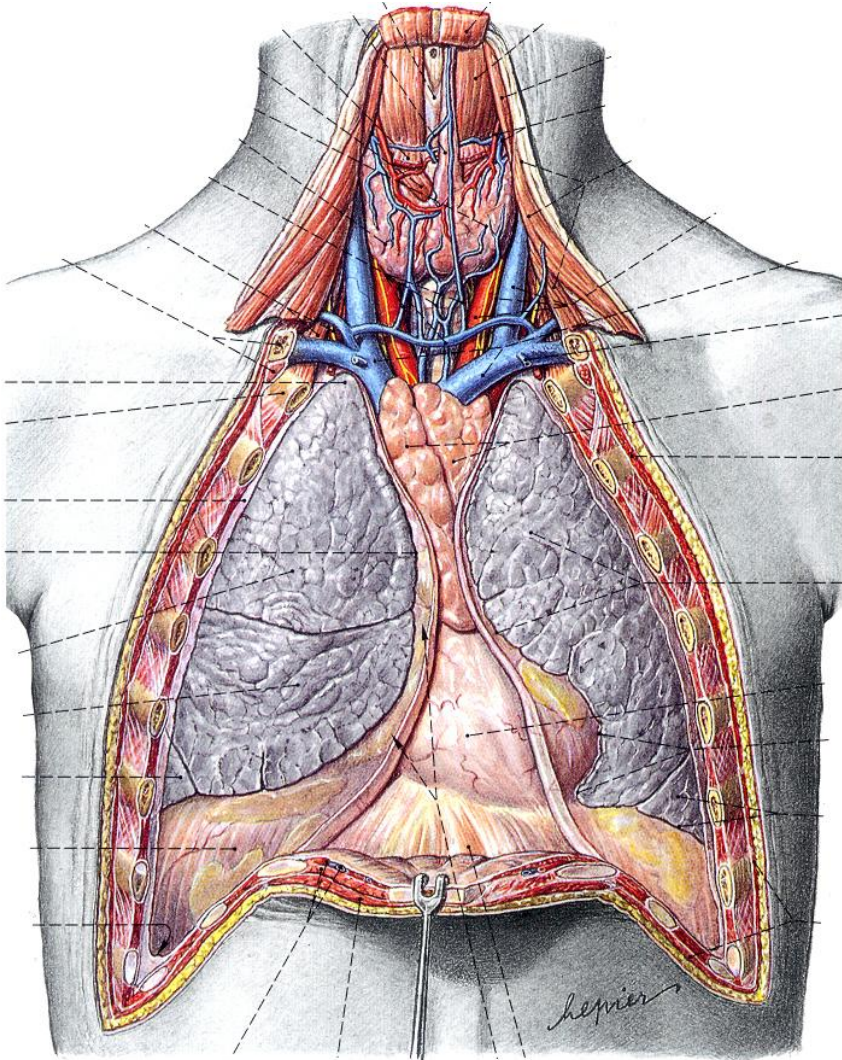
jobb





# MEDIASTINUM ANTERIUS

## A SZÍV ELHELYEZKEDÉSE



# A SZÍV HELYZETE

A *mediastinum cardiacum* képlete.

alul - diaphragma *centrum tendineum*án fekszik,

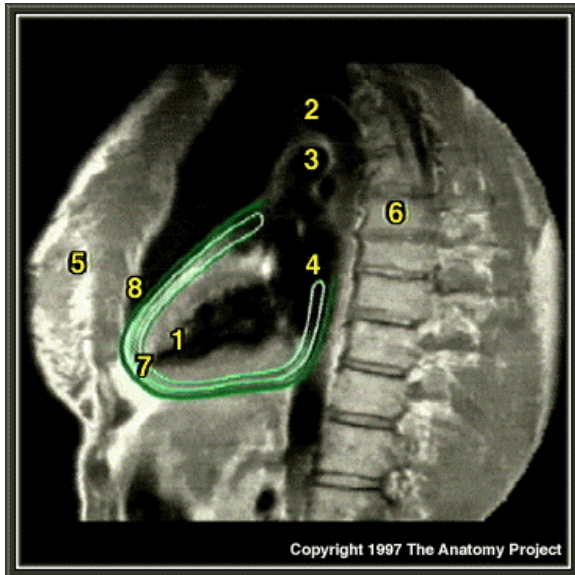
oldalt - tüdők határolják

felfelé - nagyerekben folytatódik (med. supracardiacum)

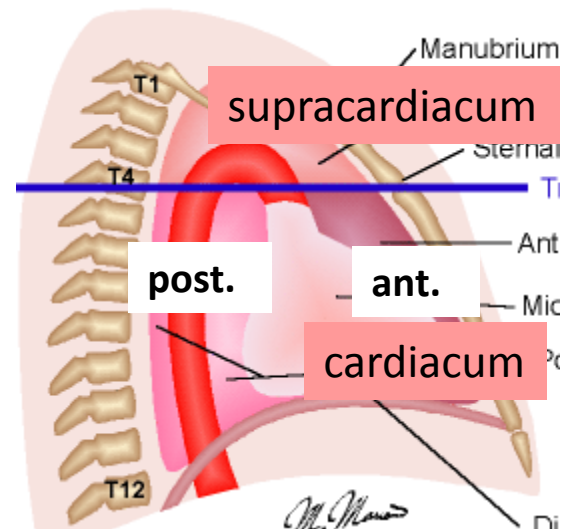
hátsó - mediastinum posterius képleteivel érintkezik

Súlya 300 - 350 g, hossza: 12 -15 cm

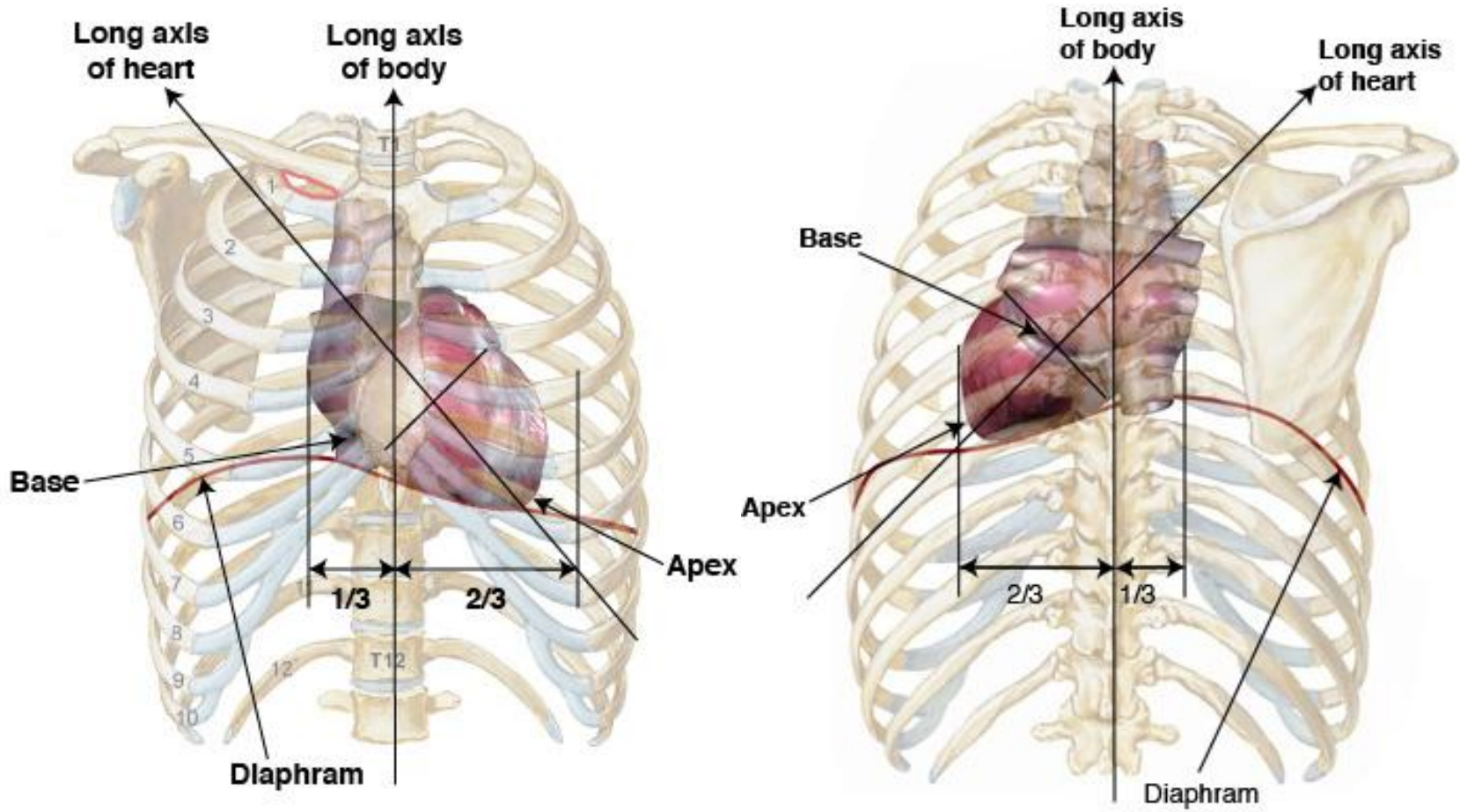
szélessége 9 -11 cm, „mélysége”: 5 -8 cm



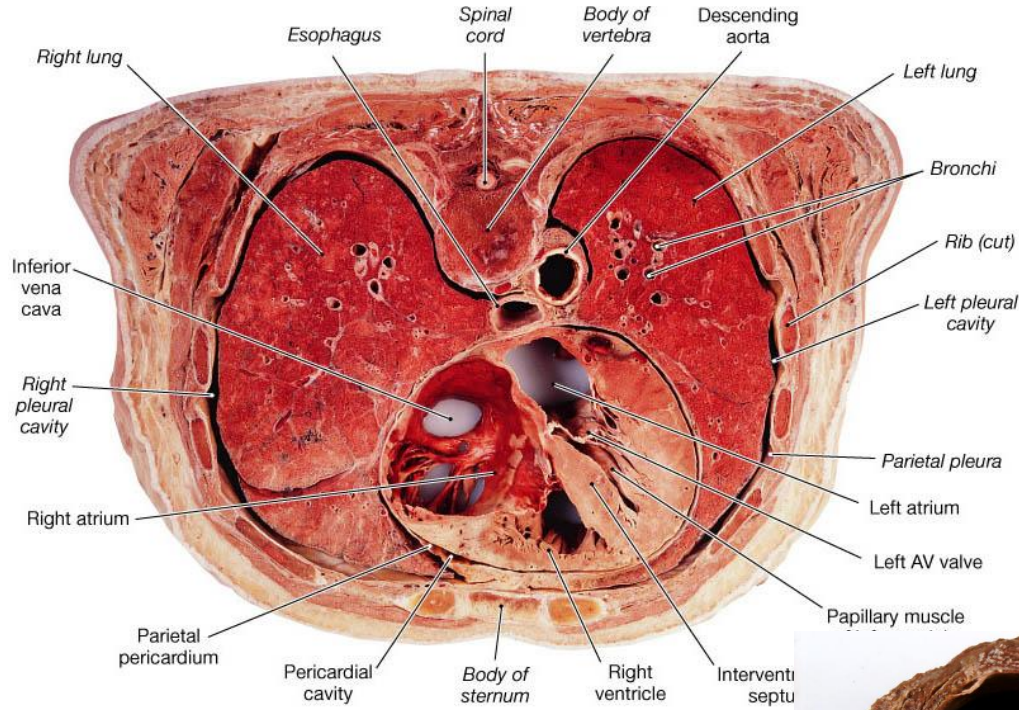
## Mediastinum részei



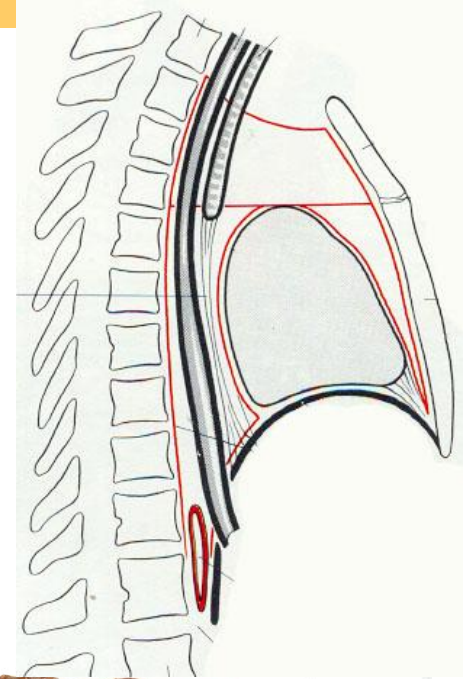
# 60 - 30 - 15



# TOPOGRAPHIA



(d) Horizontal section



# PERICARDIUM RÉSZEI, ÜREGE

**Epicardium = Pericardium viscerale**

Lamina visceralis (lamina serosa) a myocardiumot borítja (alatta subepicardialis zsír)

**Pericardium parietale**

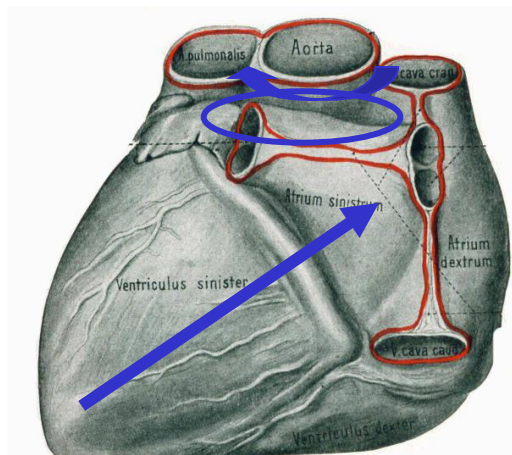
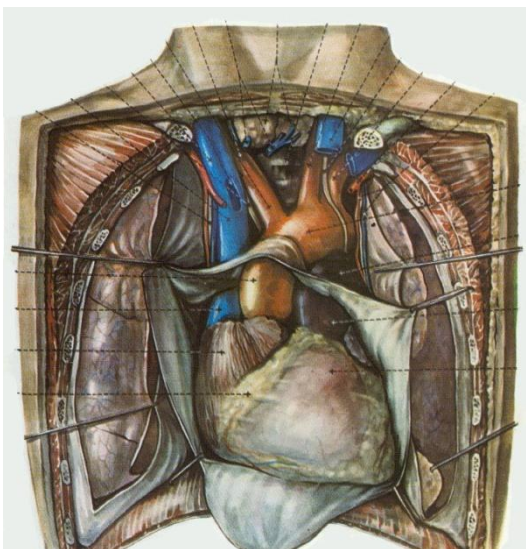
- lamina serosa

- lamina fibrosa (strata fibroelasticum et fibrillare)

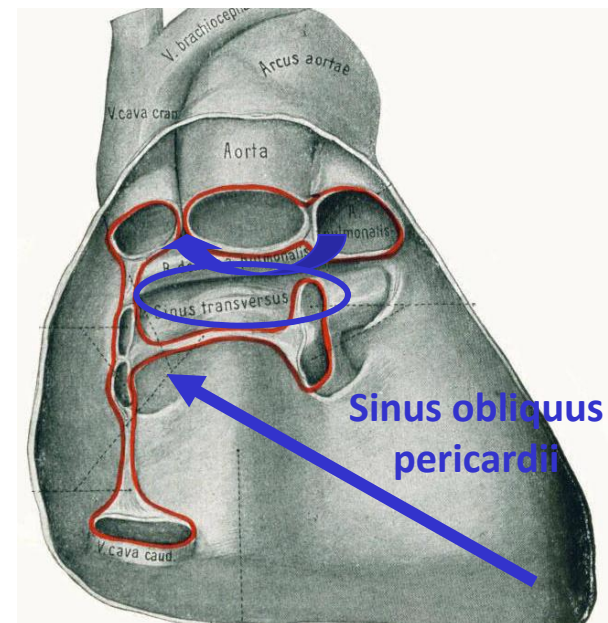
**Fix helyei: Centrum tendineum**

ligg. Sternopericardiaca

**Áthajlások: arteriák körül és vénák körül**

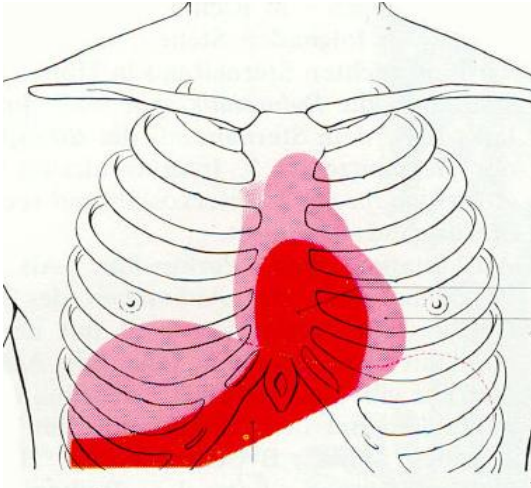


szív rekeszi felszíne

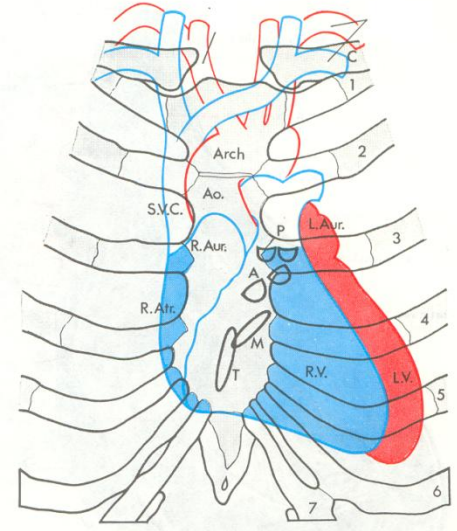


Pericardium ürege  
szív eltávolítva

# SZÍVTOMPULATOK



**Abszolút szívtompulat**  
A sternum bal oldalán,  
a IV-VI. bordák közötti  
csecsemőtenyérnyi  
terület, ahol nem  
borítja tüdő a szívet.



## Relatív szívtompulat határai

Bal oldalon parasternálisan a III. borda felső széle.

Balra a szívcsúslökés helye, vagy 1 hu-jal a medioclavicularis vonaltól  
medial felé.

Jobbra a sternum jobb széle

Alul a jobb tüdő-rekesz határának medioclavicularis vonalban levő pontja  
és a szívcsúcs-lökés közötti egyenes.

# SITUS CORDIS

## A SZÍV MELLKASFALI VETÜLETE

**1. V. cava superior**

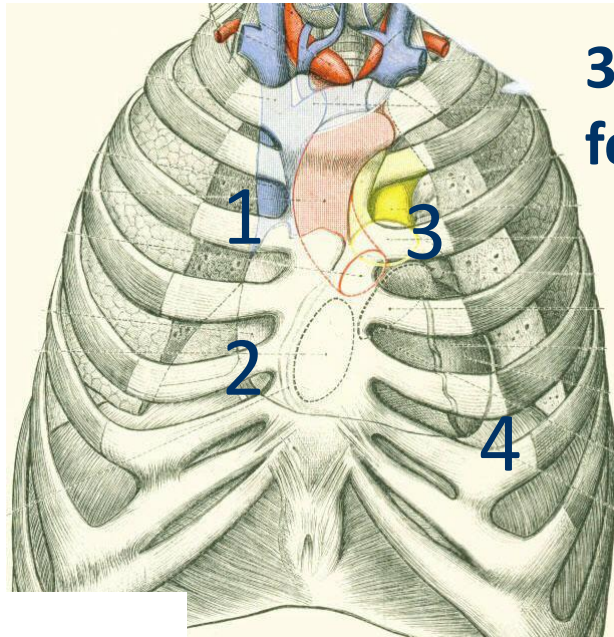
**3. Bordaporc sternalis vége**

**2. V. cava inferior**

**6. Bordaporc sternalis vége**

**3. Sulcus coronarius felső vége**

**2. Spatium intercostale (bordaporc határán)**



**4. Apex cordis**

**5. Spatium intercostale területén, a medioclavicularis vonaltól medialisán**

mediastinal

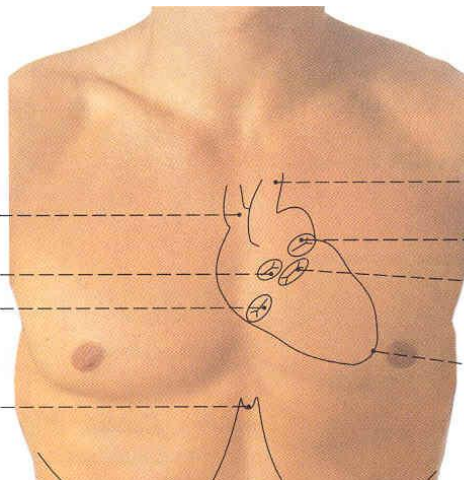
o)

V. cava superior

Valva aortae

Valva atrioventricularis dextra

Proc. xiphoideus



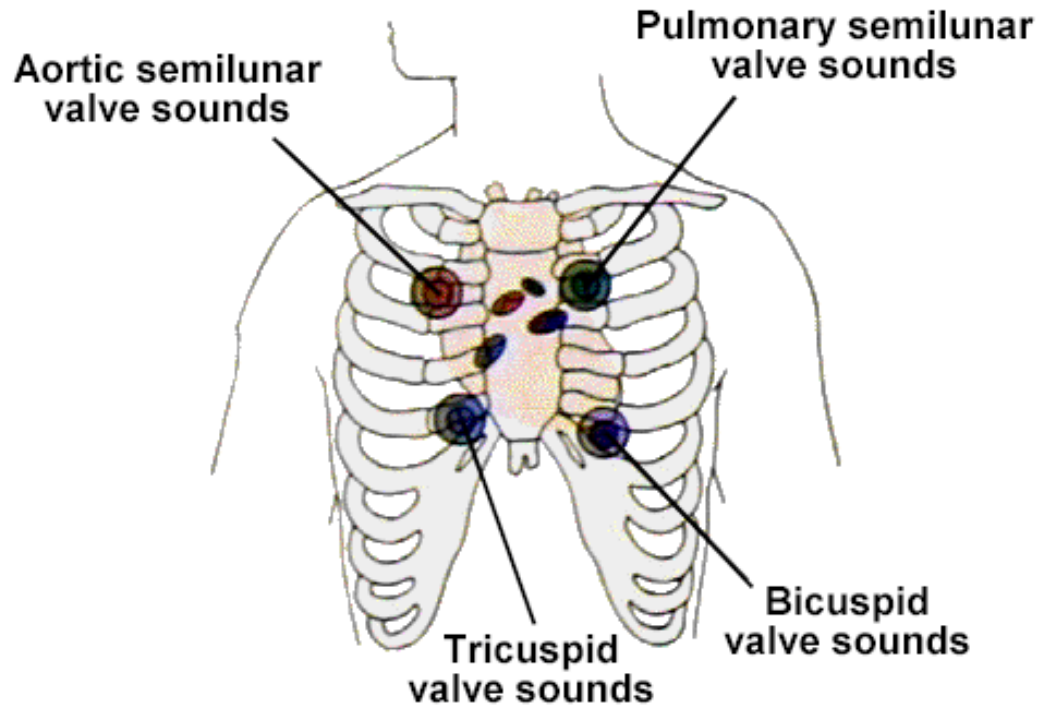
Aorta

Valva trunci pulmonalis

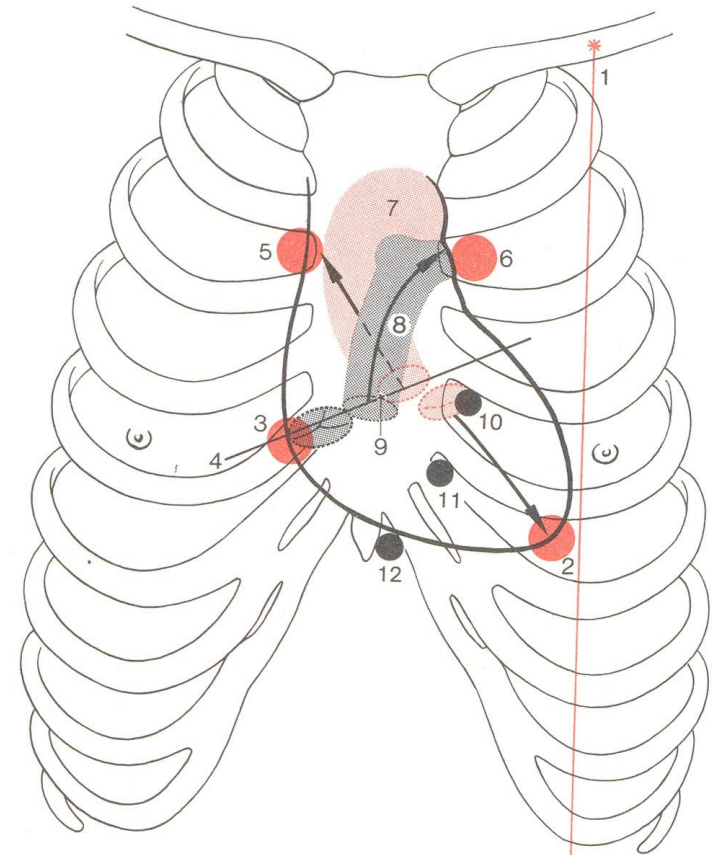
Valva atrioventricularis sinistra

Apex cordis

# AUSCULTATIO – HALLGATÓZÁSI PONTOK



- P** Pulmonary - 2nd left space, parasternally
- A** Aortic - 2nd right space, parasternally
- M** Mitral - 5th left space, mid clavicular line (apex)
- T** Tricuspid - Over lower sternum

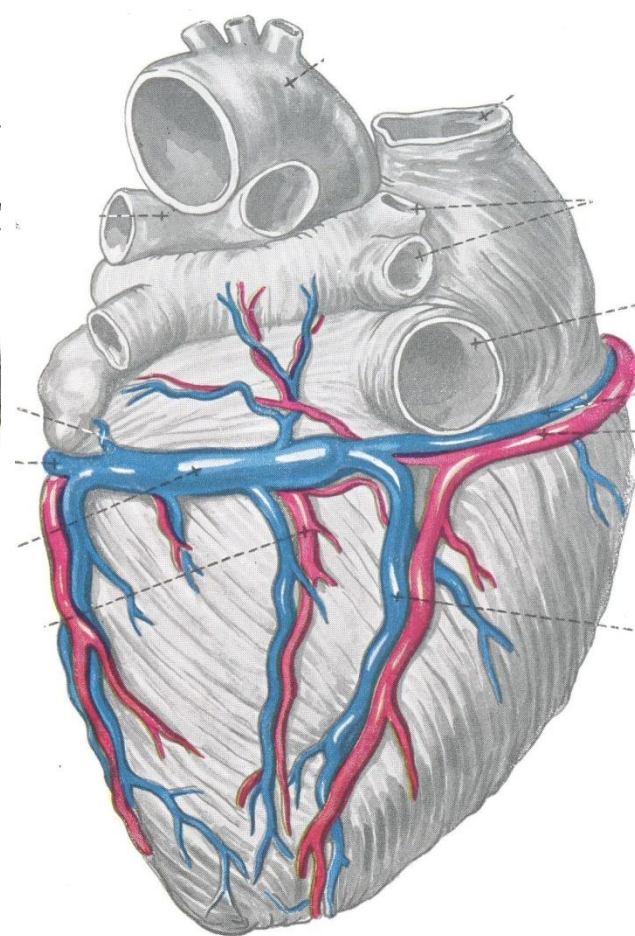
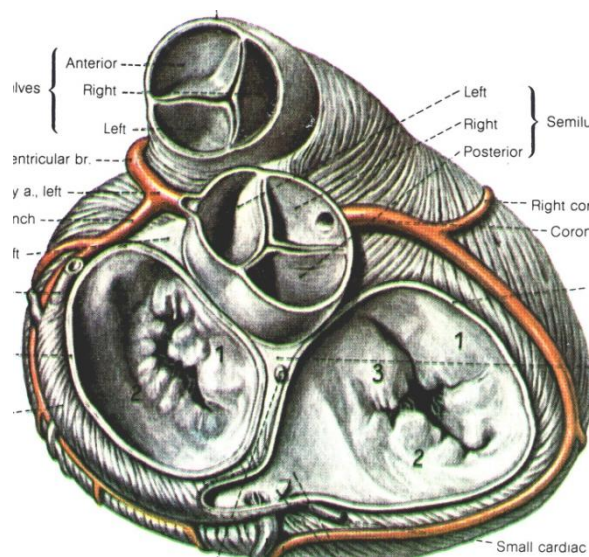
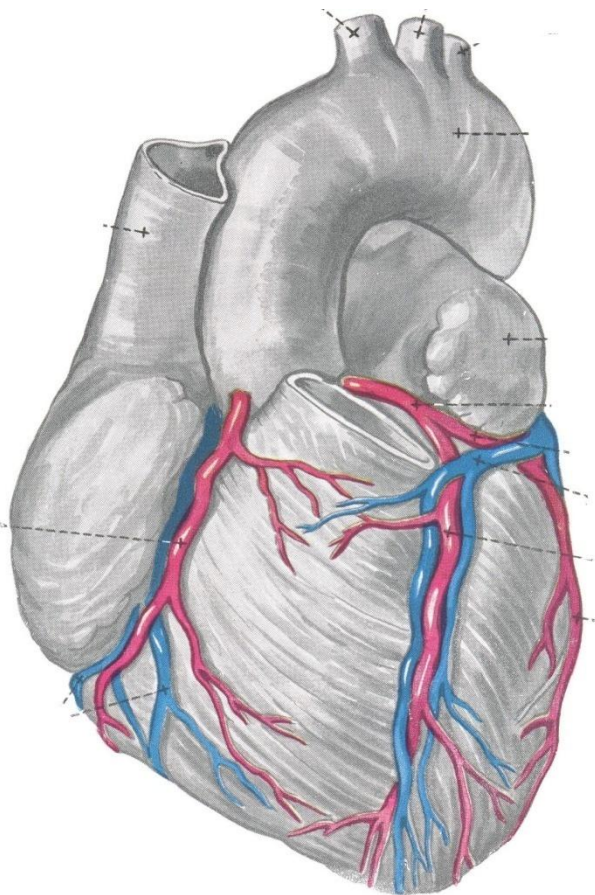


Első szívhang: kamrai systole elején, az AV-billentyűk záródásakor

Második szívhang: kamrai diastole elején, a semilunaris billentyűk záródásakor



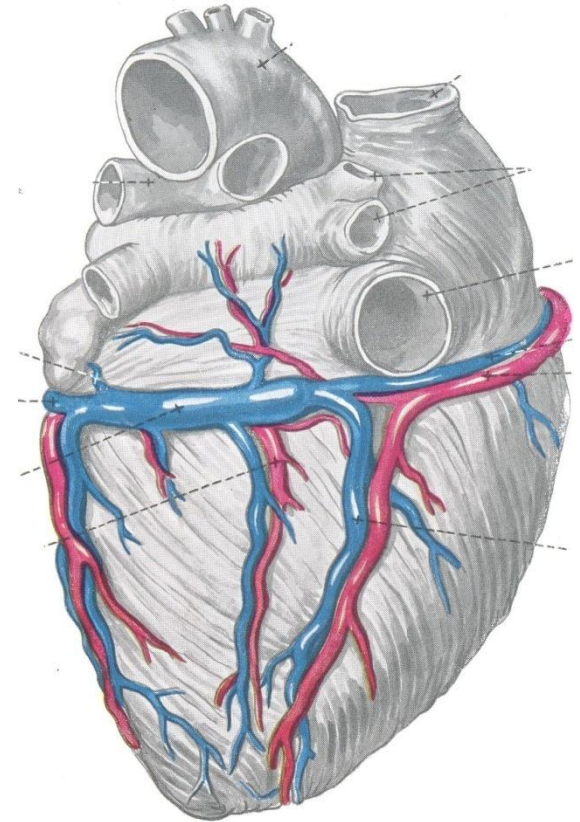
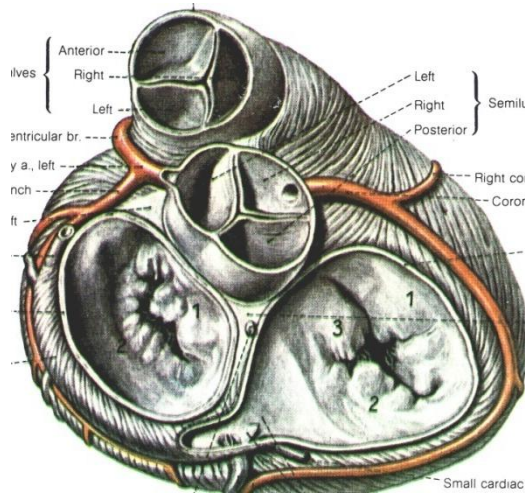
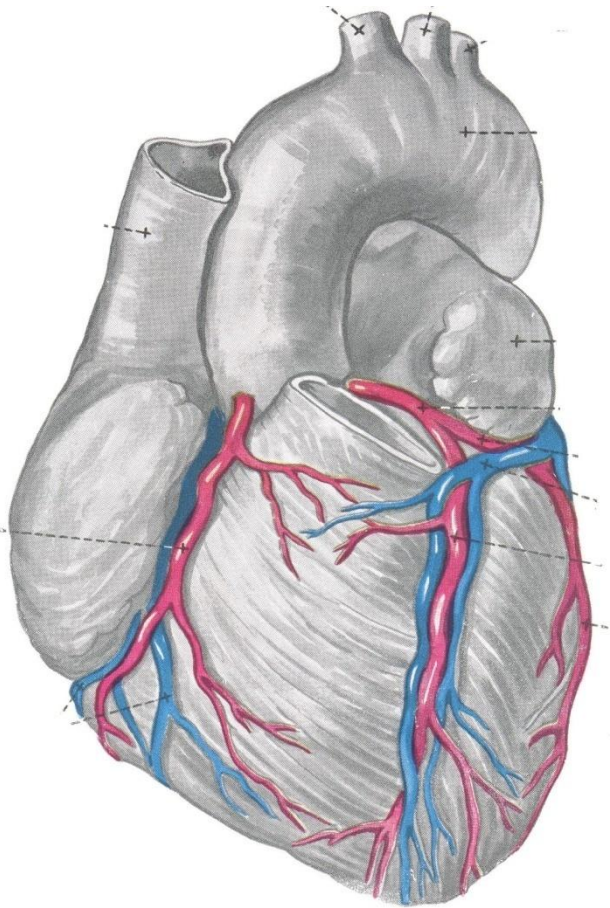
# A SZÍV EREI



## A. coronaria dextra

- r. coni arteriosi
- rr. atriales
- rr. ventriculares
- r. marginalis dext.
- r. Nodi sinuatrialis
- r. interventr. post.
- rr. interventr. postt.

# A SZÍV EREI



## A. coronaria sinistra

*r. interventr. ant.*

*r. coni arteriosi*

*r. lateralis*

*rr. interventr. antt.*

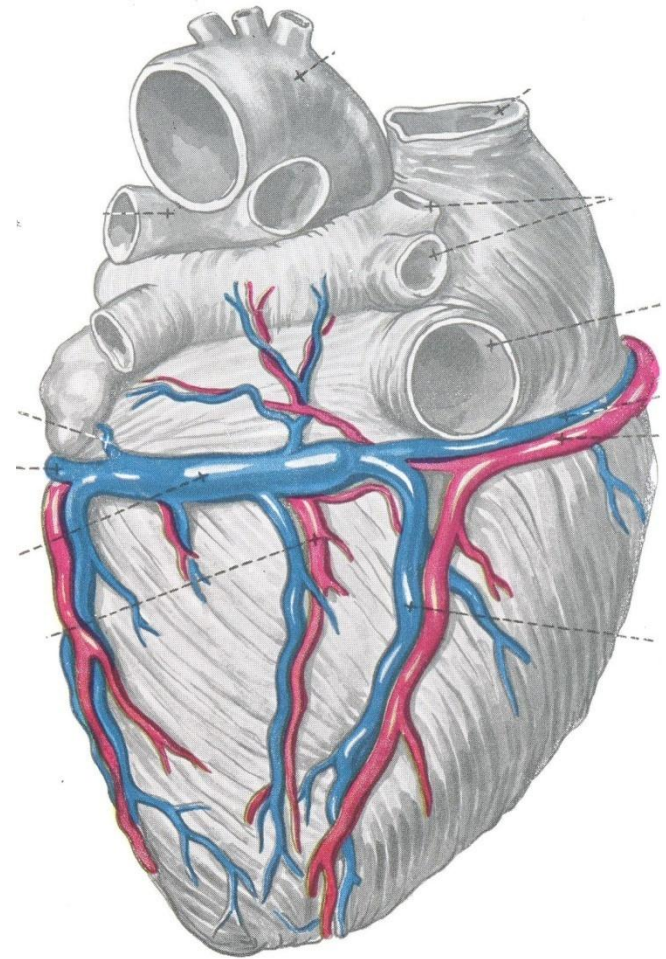
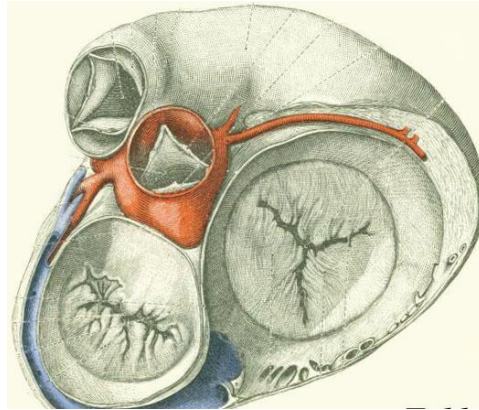
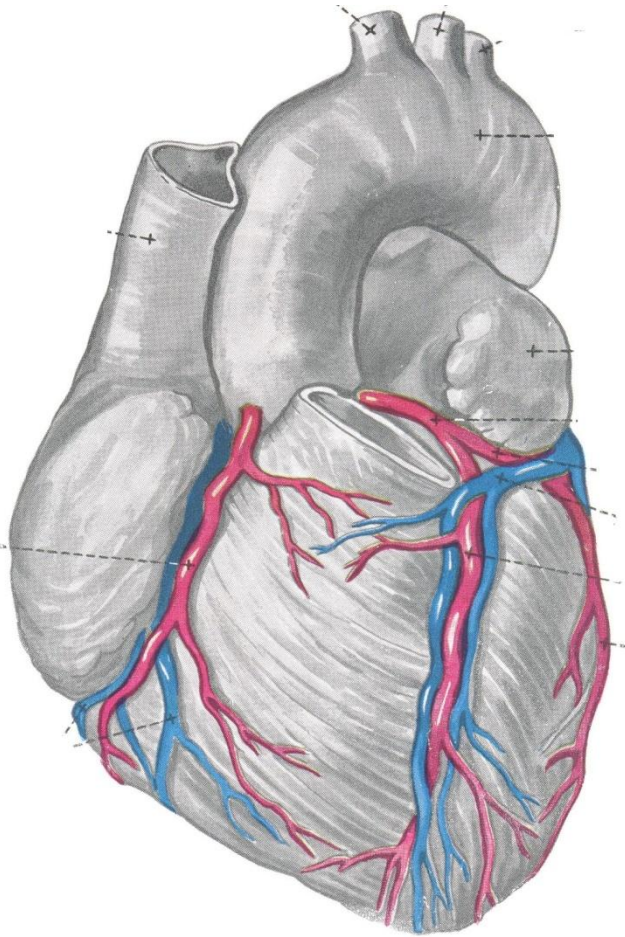
*r. circumflexus*

*r. atrioventricularis*

*r. marg. sin.*

*rr. atriales*

# A SZÍV EREI



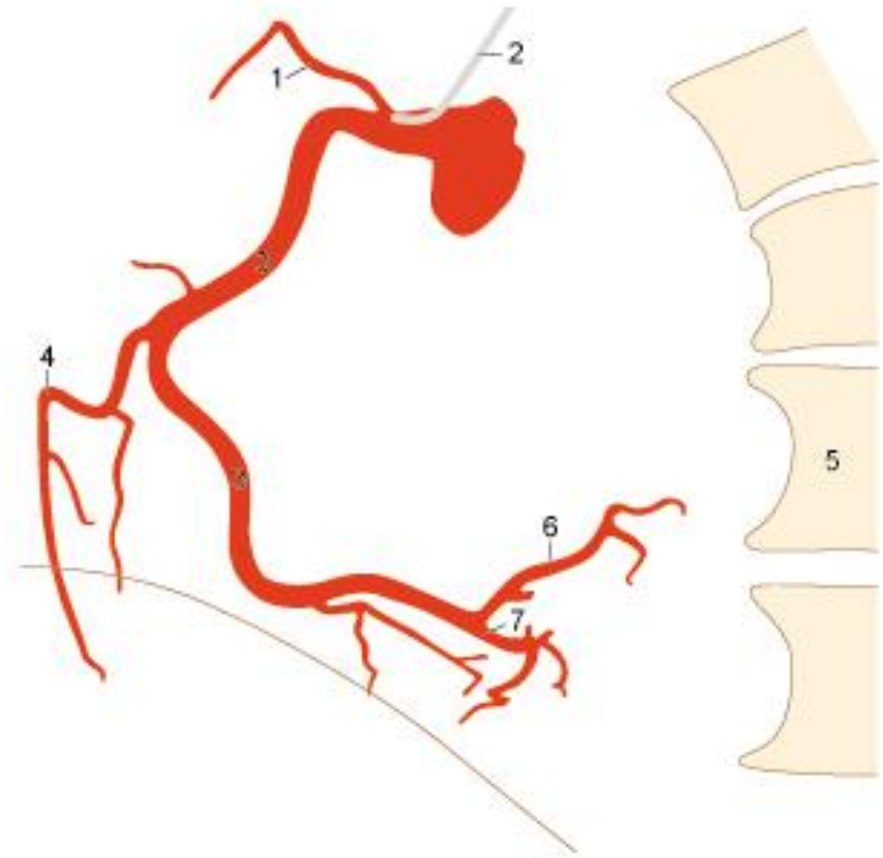
## Sinus coronarius

- v. cordis magna
- v. cordis media
- v. cordis parva
- vv. post. ventrr. sinn.
- v. obliqua atrii sinistri
- vv. cordd. antt.
- vv. cordd. minimae

# ANGIOCARDIOGRAM - a. coronaria dextra



1. Sinus artery
2. Catheter
3. Right coronary artery
4. Right ventricular branch



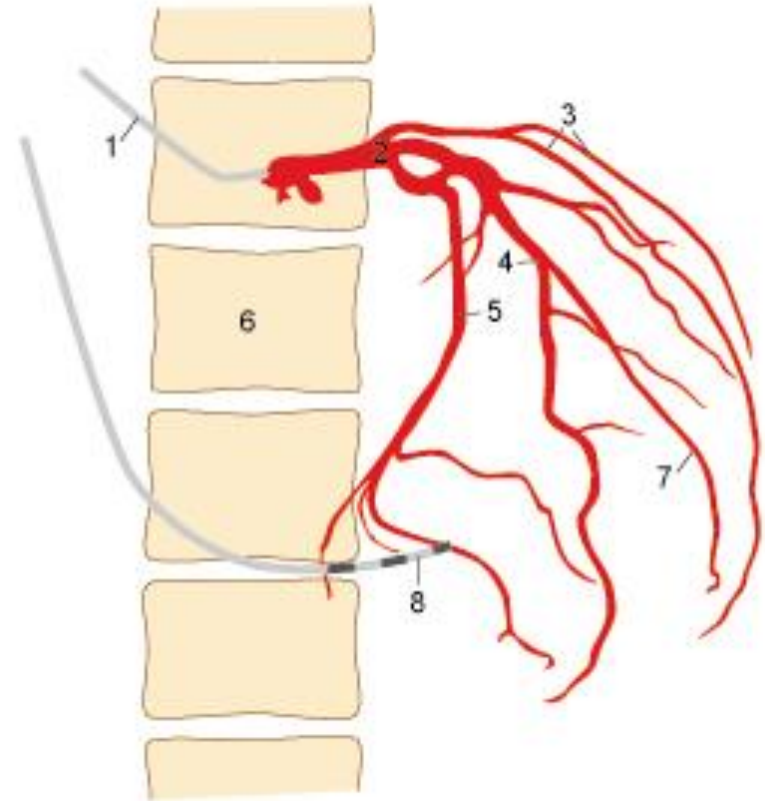
5. Vertebral column
6. Posterolateral branch
7. Posterior descending (interventricular branch)

T20

# ANGIOCARDIOGRAM - a. coronaria sinistra



1. Catheter
2. Left main coronary artery
3. Obtuse marginals
4. Anterior descending (interventricular) artery
5. Circumflex artery



6. Vertebral column
7. Diagonal branch
8. Pacemaker in the right atrium with tip in right ventricle

# INGERKELTŐ ÉS INGERVEZETŐ RENDSZER

## *Systema conducens cordis*

**Nodus sinuatrialis** (Keith-Flack)

*v. cava superiornál a crista terminalisban*



Wenkebach, Bachmann, Thorel, Tandler  
(pitvari izomnyalábok)



**Nodus atrioventricularis** (Aschoff-Tawara)

*sinus coronariusnál a limbus fossae ovalisban*



**Truncus fasc. atrioventricularis** (His-köteg)

*(trig. fibr. dext.)*



**Crura sinistrum et dextrum**

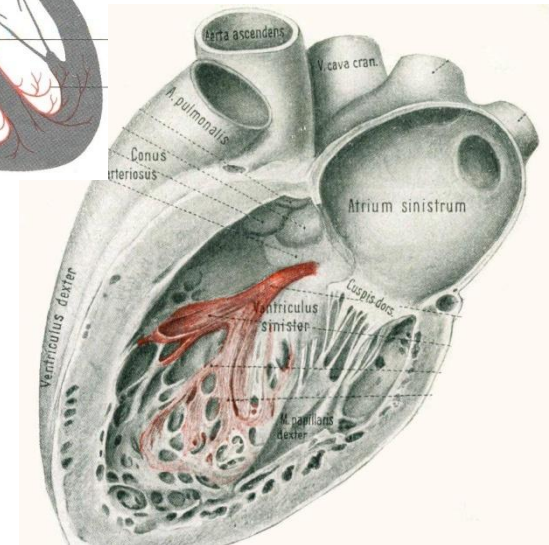
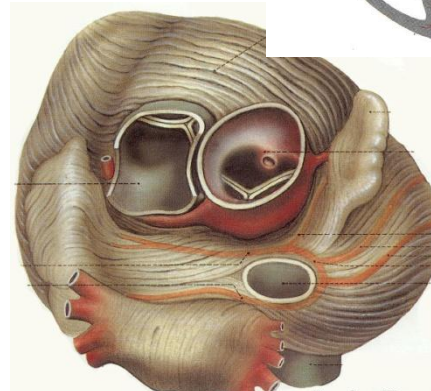
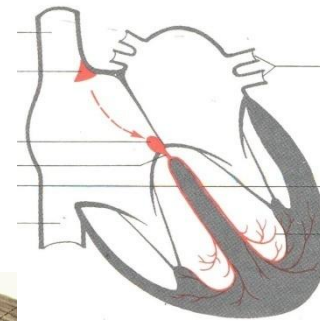
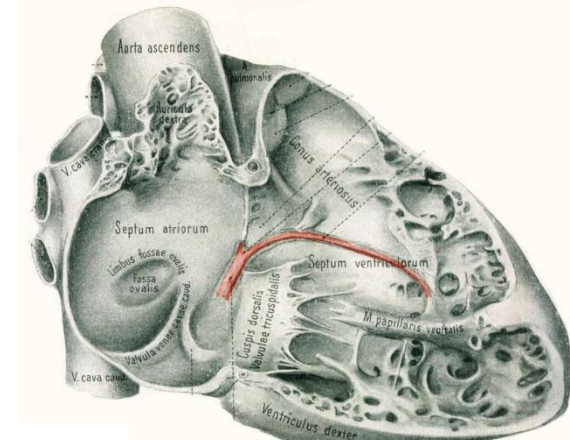
(Tawara)



**Purkinje-rostok**



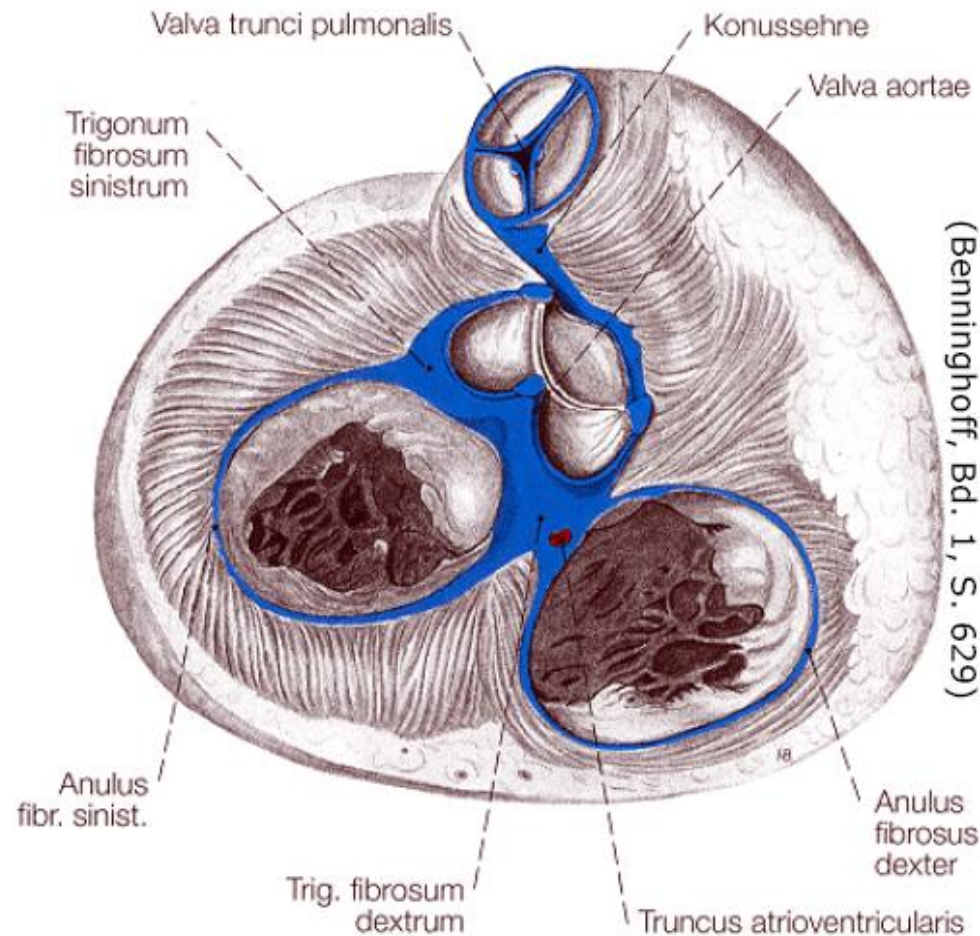
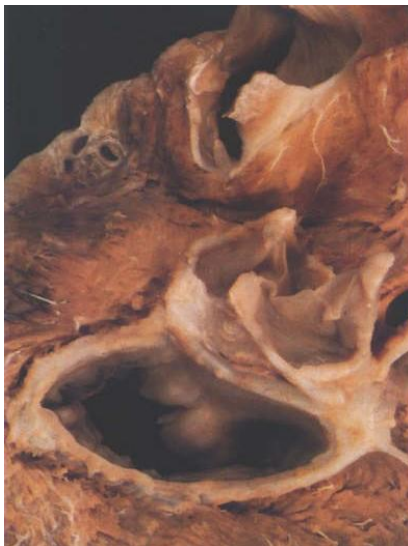
munkaizomzat



# A SZÍV ROSTOS VÁZA – ANULUS FIBROSUS

A szájadékoknál található kollagén és elasztikus rostos (inkomplett) „gyűrűk” - 2x *filum coronarium*

**SZEREPEK:**  
Kamrák és  
pitvarok  
elektromos  
izolációja



# A SZÍV BEIDEGZÉSE

## AFFERENSEK

- fájdalomérzés
- Pressor-recepció
- Chemorecepció

## EFFERENSEK

- chromotrop hatás (szívfrekvencia)
- inotrop hatás (kontrakció ereje)
- dromotrop hatás (vezetési idő)  
*(mind a csomókban, mind pedig a munkaizomzaton végződik)*

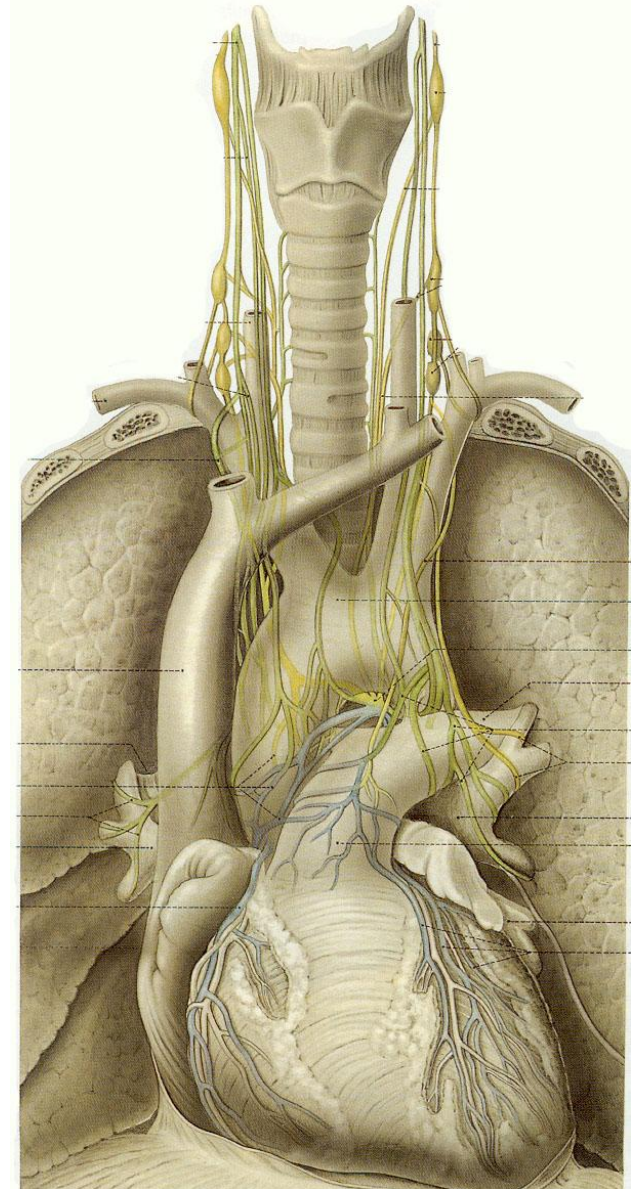
## PLEXUS CARDIACUS

**Sympathicus** és  
**Nn. cardiaci supp.,  
medii et inferiores  
thoracici**

**Tr. Sympathicus**

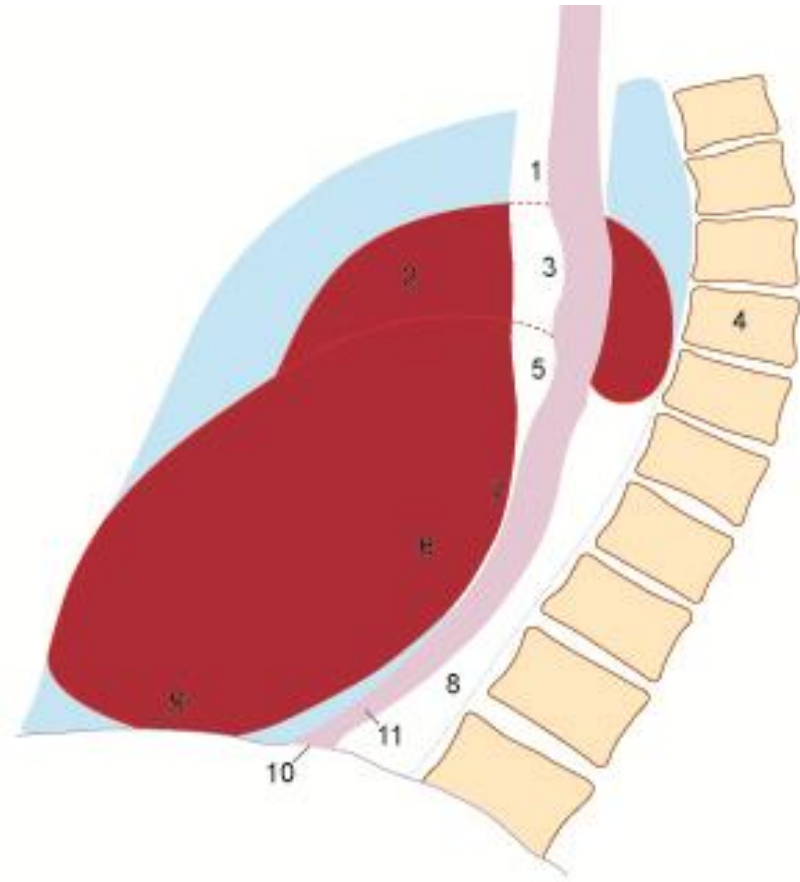
**Parasympathicus**  
**Rr. cardiaci supp., medii,  
et inferiores thoracici**

**N. vagus**





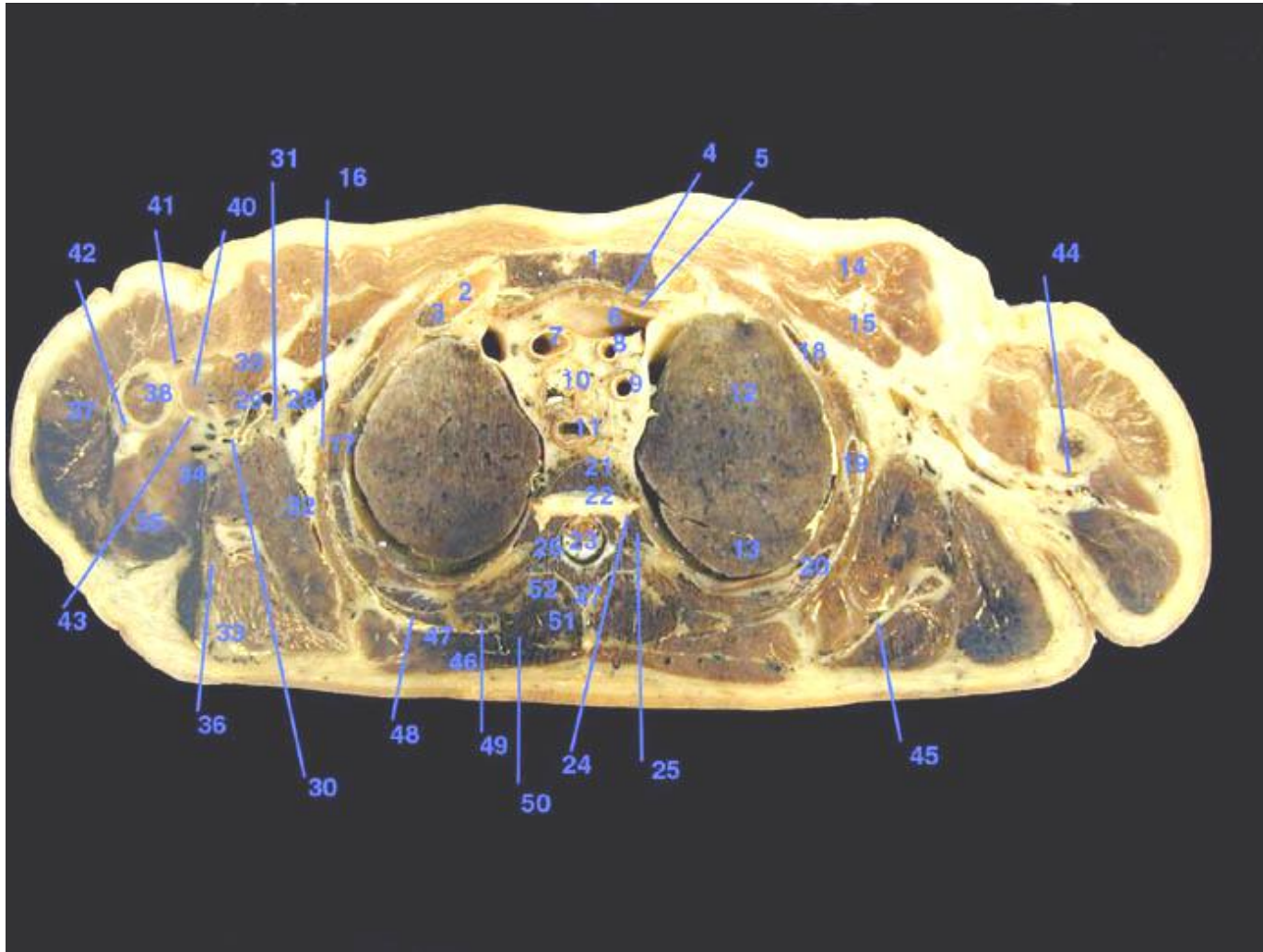
# SITUS CORDIS



1. Trachea
2. Aorta ascendens
3. Impressio aortica
4. Columna vertebralis
5. Bal főhörgő benyomata
6. Bal pitvar

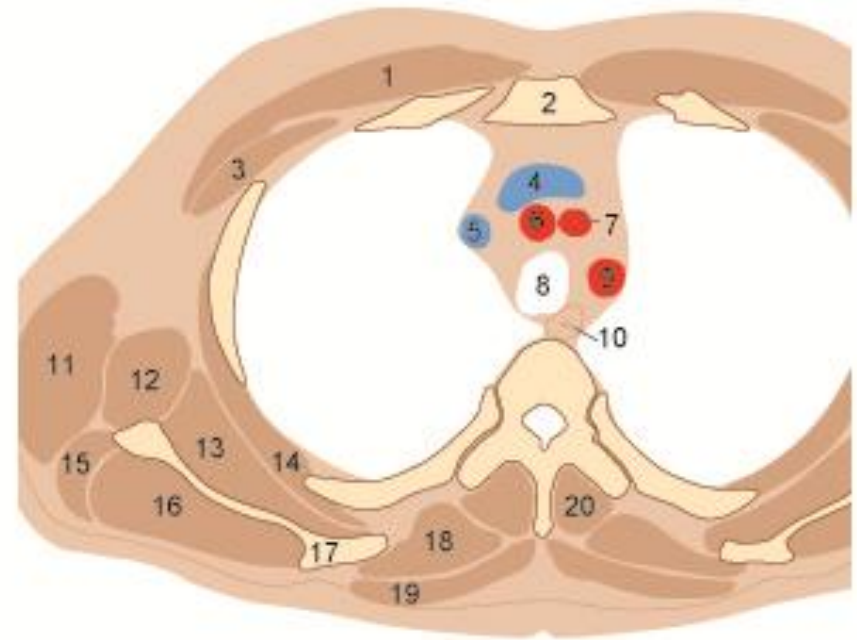
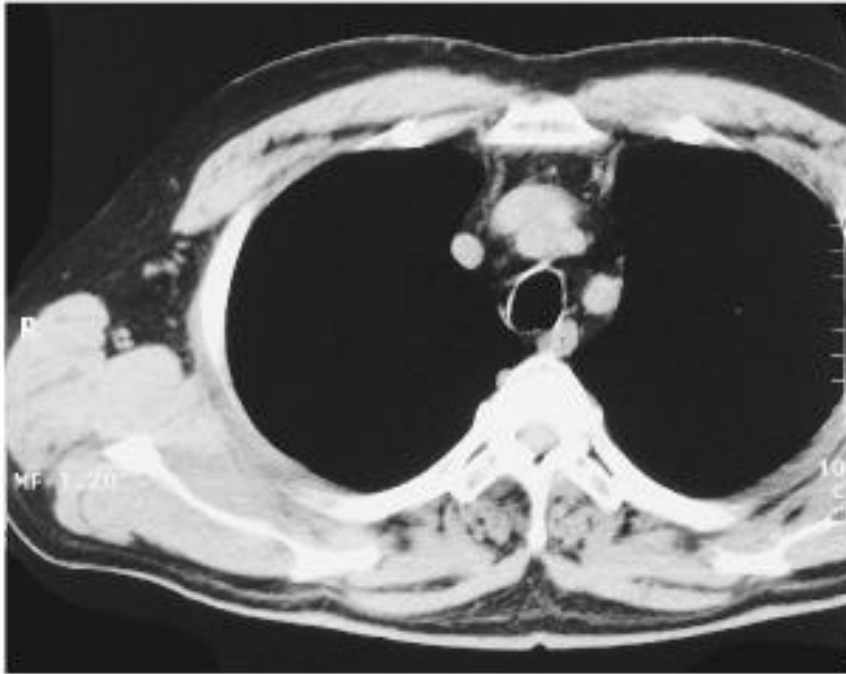
7. Impressio cardiaca
8. Spatium retrocardiacum
9. Diaphragma
10. Hiatus oesophageus (oesophago-gastricus átmenet)
11. Kontrasztanyag a nyelőcsőben

T51



1. Manubrium sterni
2. Cartilago costalis
3. Costa 1
4. M. sternohyoideus
5. M. sternothyroideus
6. V. brachiocephalica sinistra
7. Truncus brachiocephalicus
8. A. carotis communis
9. A. subclavia
10. Trachea
11. Esophagus
12. Pulmo sinister, Lobus superior
13. Pulmo sinister, Lobus inferior
14. M. pectoralis major
15. M. pectoralis minor
16. M. serratus anterior
17. M. intercostalis
18. Costa 2
19. Costa 3
20. Costa 4
21. Corpus vertebrae thoracicae 4
22. Discus intervertebralis
23. Medulla spinalis
24. Articulatio capitae costae
25. Caput costae 4
26. Pediculus arcus vertebrae thoracicae 4
27. Processus spinosus Th4
28. V. axillaris
29. A. axillaris
30. A. circumflexa humeri posterior
31. Plexus brachialis, Fasciculi
32. M. subscapularis
33. M. infraspinatus
34. M. teres major
35. Caput longum m. tricipitis brachii
36. M. teres minor
37. M. deltoideus
38. Humerus
39. Caput breve m. bicipitis brachii
40. M. coracobrachialis
41. Caput longum m. bicipitis brachii
42. Caput laterale m. tricipitis brachii
43. Tendo m. latissimi dorsi
44. Caput mediale m. tricipitis brachii
45. Scapula
46. M. trapezius
47. M. rhomboideus major
48. M. serratus posterior superior
49. M. longissimus cervicis
50. M. semispinalis capitis
51. M. semispinalis thoracis
52. M. multifidus

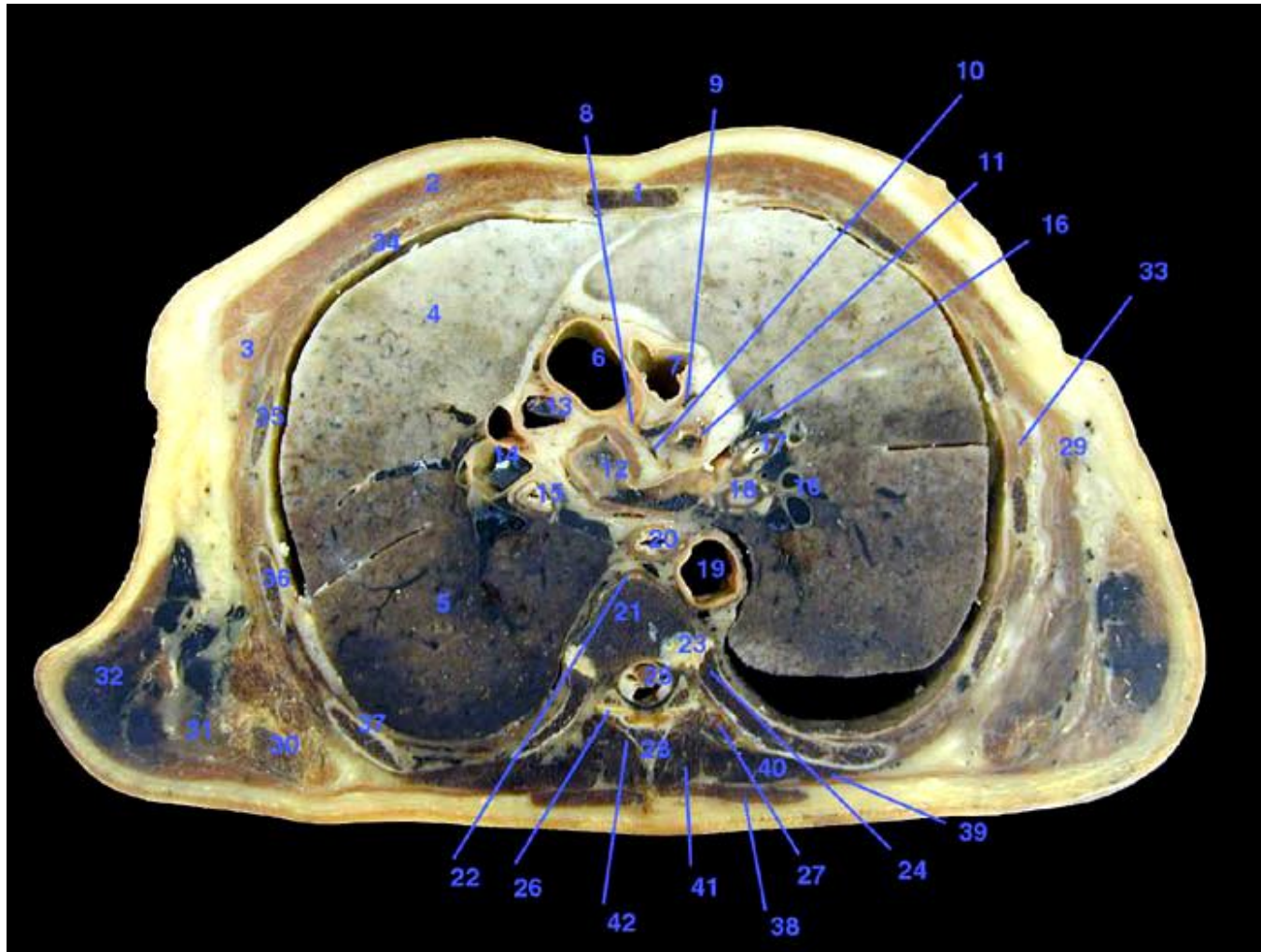
# AXIALIS CT



1. M. pectoralis major
2. Sternum
3. M. pectoralis minor
4. V. brachiocephalica sin.
5. V. brachiocephalica dext.
6. Art. brachiocephalica
7. Art. carotis commun. sin.
8. Trachea
9. Art. subclavia sin.
10. Oesophagus

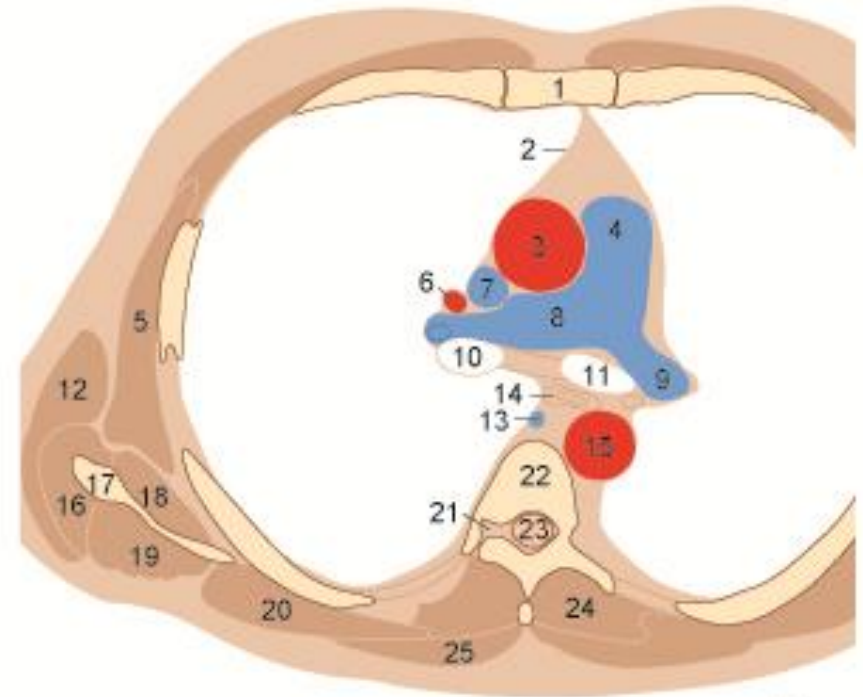
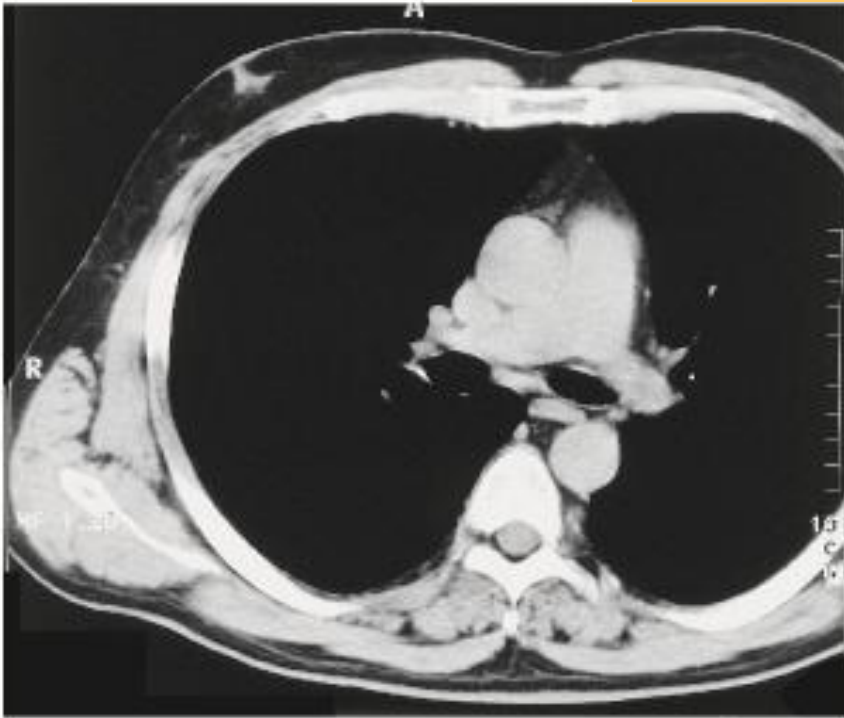
11. M. latissimus dorsi
12. M. teres major
13. M. subscapularis
14. M. serratus ant.
15. M. teres minor
16. M. infraspinatus
17. Scapula
18. Mm. rhomboidei
19. M. trapezius
20. M. erector spinae

T6



1. Corpus sterni
2. M. pectoralis major
3. M. pectoralis minor
4. Pulmo dexter, Lobus superior
5. Pulmo dexter, Lobus inferior
6. Aorta ascendens
7. Truncus pulmonalis
8. A. coronaria sinistra
9. Ramus interventricularis anterior
10. Ramus circumflexus
11. Auricula sinistra
12. Atrium sinistrum
13. V. cava superior
14. A. pulmonalis dextra, upper lobe artery
15. Bronchus principalis dexter
16. Vv. pulmonales sinistrae
17. Bronchus lobaris superior sinister
18. Bronchus lobaris inferior sinister
19. Aorta descendens
20. Esophagus
21. Corpus vertebrae thoracicae 7
22. Lig. longitudinale anterius
23. Articulatio capitae costae
24. Caput costae 8
25. Medulla spinalis
26. Articulatio zygapophysialis
27. Processus transversus Th8
28. Processus spinosus Th7
29. M. serratus anterior
30. Scapula
31. M. teres major
32. M. latissimus dorsi
33. M. intercostalis
34. Costa 4
35. Costa 5
36. Costa 6
37. Costa 7
38. M. trapezius
39. M. iliocostalis thoracis
40. M. longissimus thoracis
41. M. semispinalis thoracis
42. M. multifidus

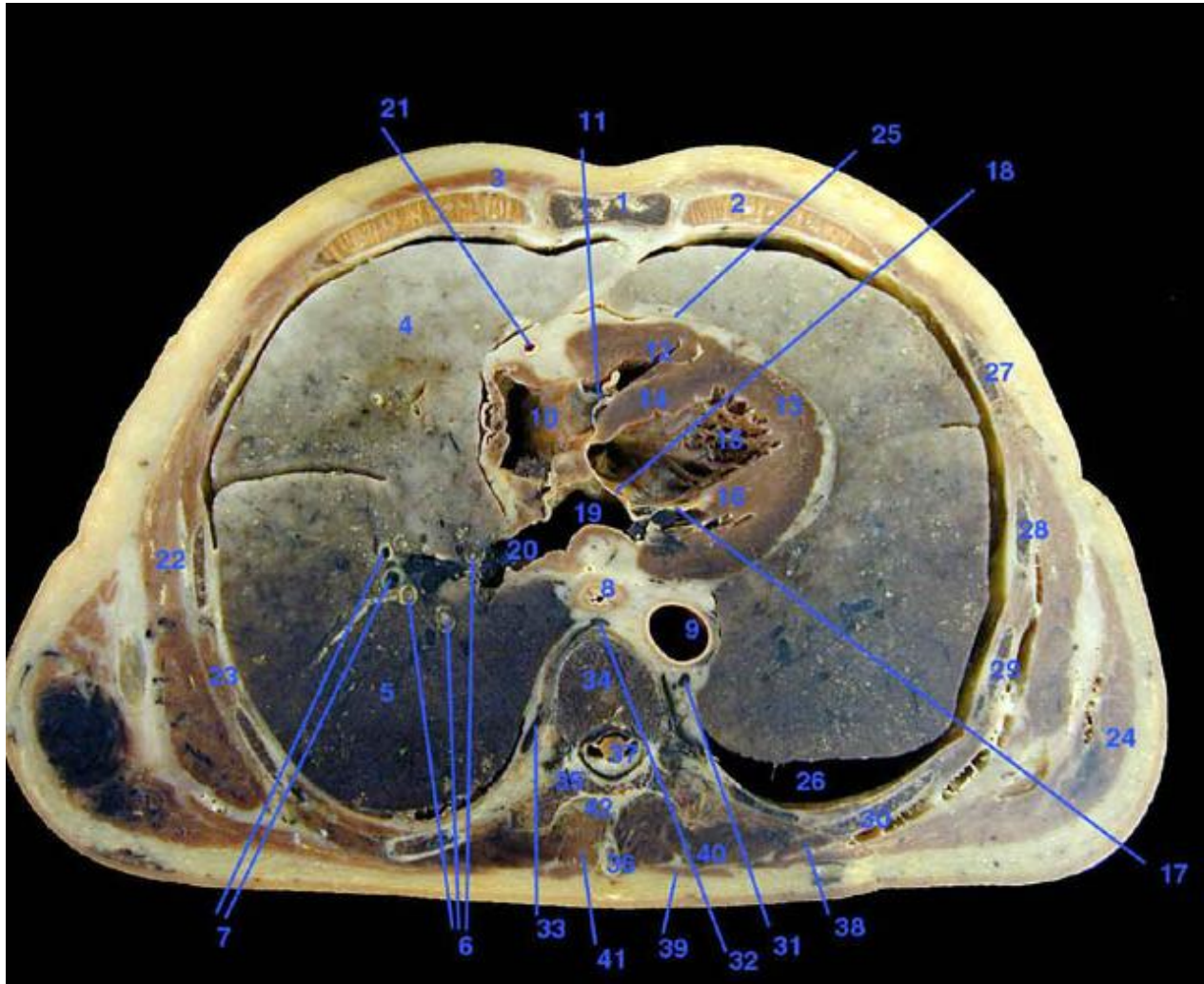
# AXIALIS CT



1. Sternum
2. Pleura mediastinalis
3. Aorta ascendens
4. Truncus pulmonalis
5. M. serratus ant.
6. V. pulmonalis sup. dext.
7. V. cava sup.
8. Art. pulmonalis dext..
9. Art. pulmonalis sin.
10. Bronchus intermedius (dext.)
11. Bronchus principalis sin.
12. M. latissimus dorsi
13. V. azygos

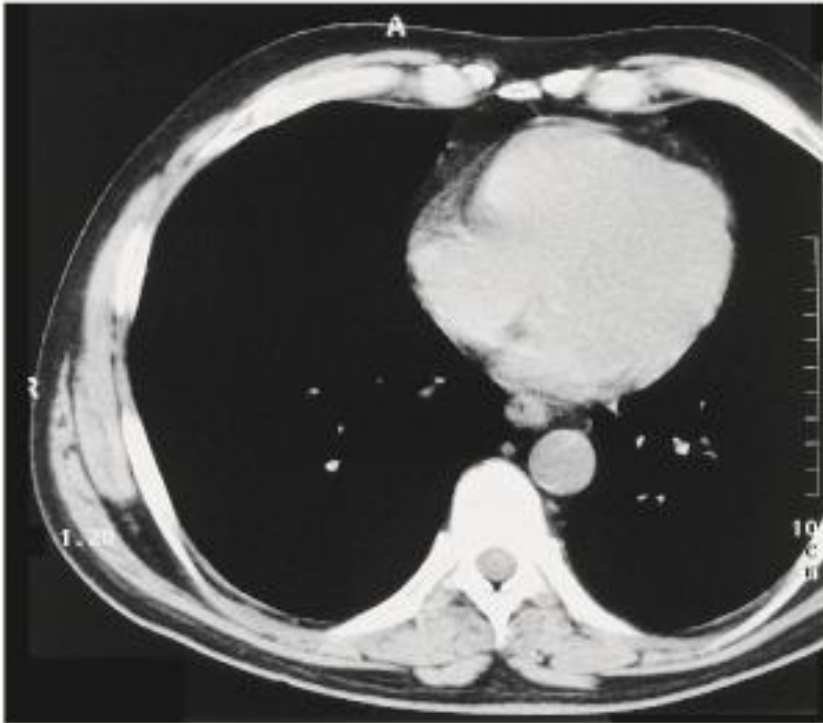
14. Oesophagus
15. Aorta thoracica desc.
16. M. teres major
17. Scapula
18. M. subscapularis
19. M. infraspinatus
20. Mm. rhomboidei
21. Foramen intervertebrale
22. Vertebra thoracica
23. Medulla spinalis
24. M. erector spinae
25. M. trapezius

T9

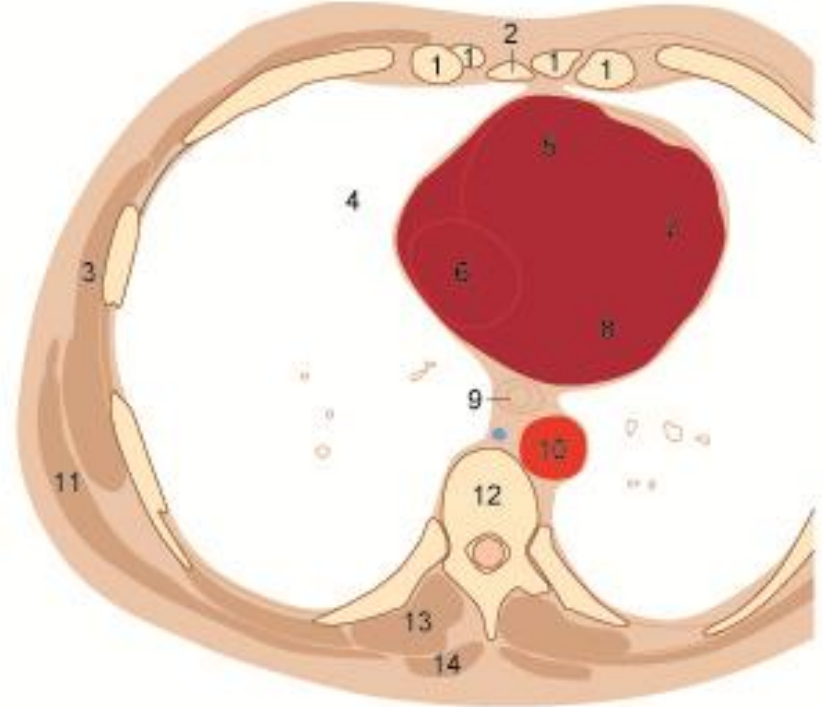


1. Corpus sterni
2. Cartilago costalis
3. M. pectoralis major
4. Pulmo dexter, Lobus superior
5. Pulmo dexter, Lobus inferior
6. Bronchi segmentales dextri
7. Branches of A. pulmonalis dextra
8. Esophagus
9. Aorta descendens
10. Atrium dextrum
11. Valva atrioventricularis dextra (tricuspidalis)
12. Ventriculus dexter
13. Ventriculus sinister, Myocardium
14. Septum interventriculare
15. Trabeculae carneae
16. Musculus papillaris anterior
17. Chordae tendineae
18. Valva atrioventricularis sinistra (mitralis)
19. Atrium sinistrum
20. V. pulmonalis dextra
21. A. coronaria dextra
22. M. serratus anterior
23. M. intercostalis
24. M. latissimus dorsi
25. Pericardium & Pleura mediastinalis
26. Cavitas pleurae
27. Costa 6
28. Costa 7
29. Costa 8
30. Costa 9
31. V. hemiazygos
32. V. azygos
33. V. intercostalis
34. Corpus vertebrae thoracicae 9
35. Processus transversus Th9
36. Processus spinosus Th8
37. Medulla spinalis
38. M. iliocostalis thoracis
39. M. trapezius
40. M. longissimus thoracis
41. M. semispinalis thoracis
42. M. multifidus

# AXIALIS CT

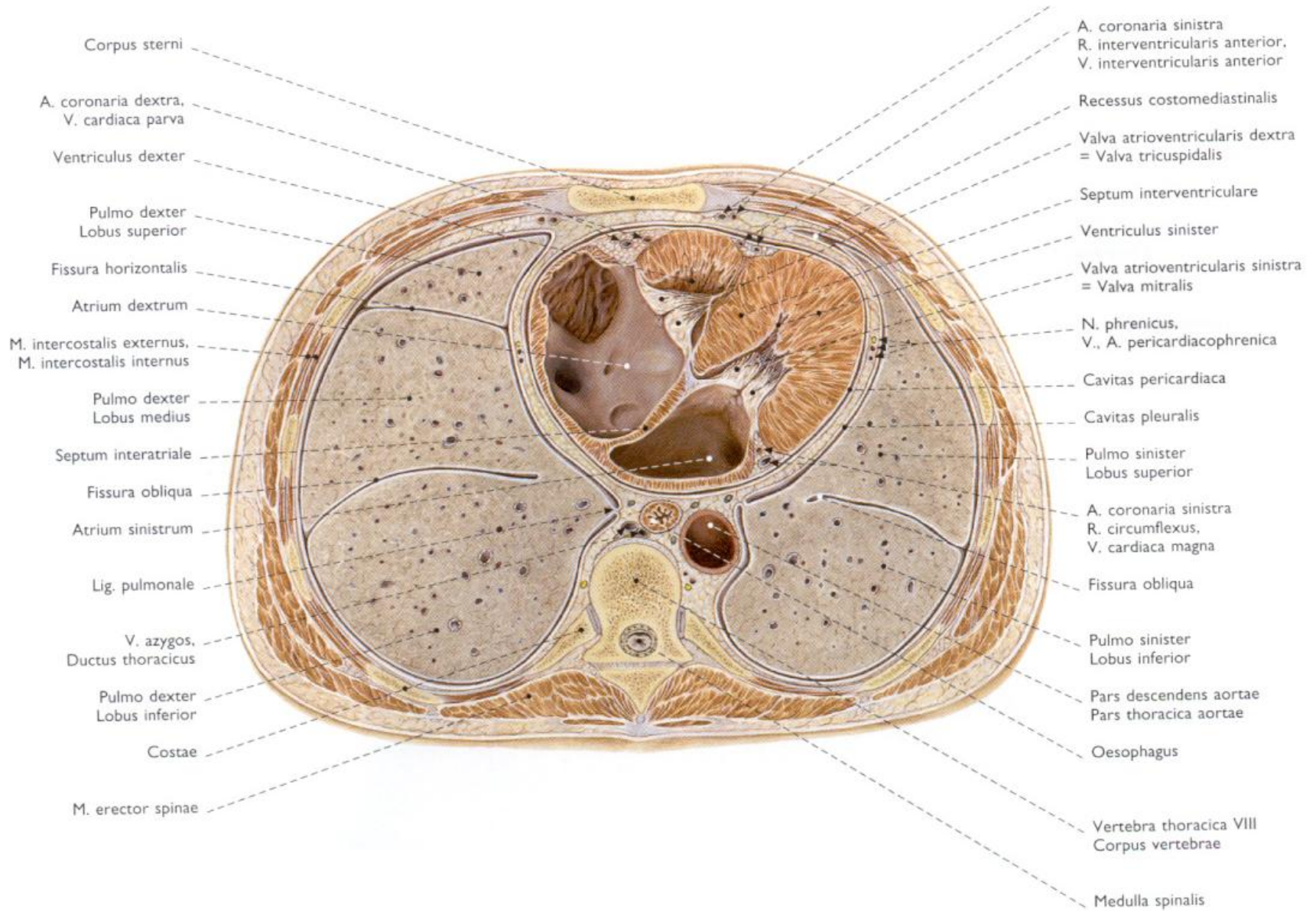


1. Cartilago costalis
2. Processus xiphoideus
3. M. serratus ant.
4. Pulmo (lobus medius)
5. Jobb kamra
6. Jobb pitvar
7. Bal kamra



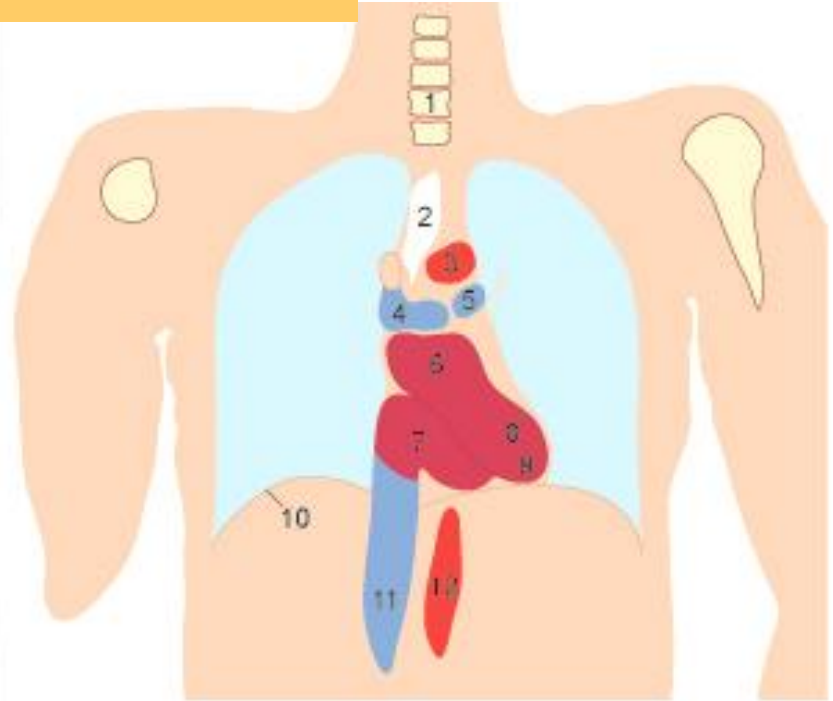
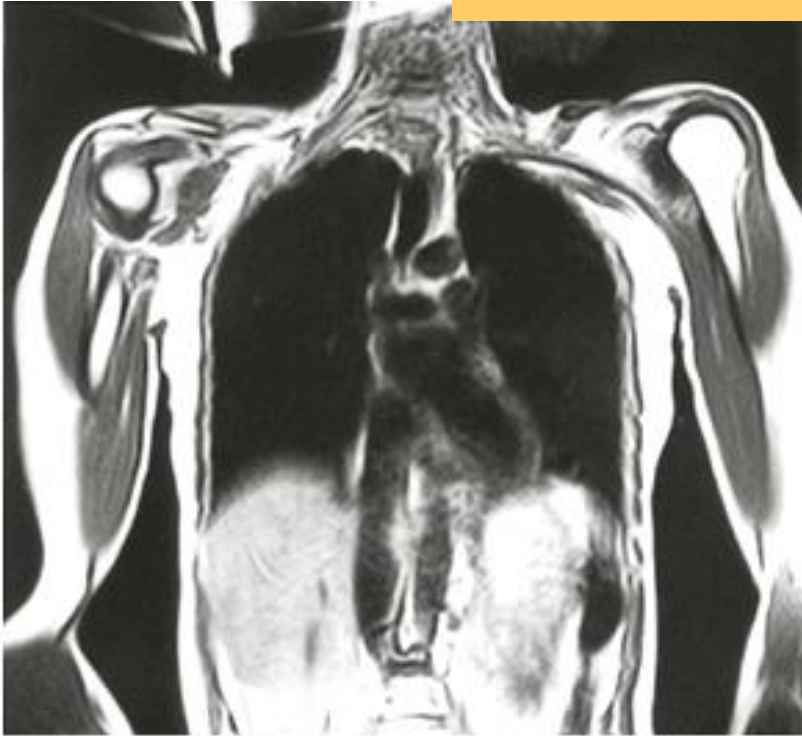
8. Bal pitvar
9. Oesophagus
10. Aorta thoracica desc.
11. M. latissimus dorsi
12. Vertebra thoracica
13. M. erector spinae
14. M. trapezius

T12





# CORONALIS MR

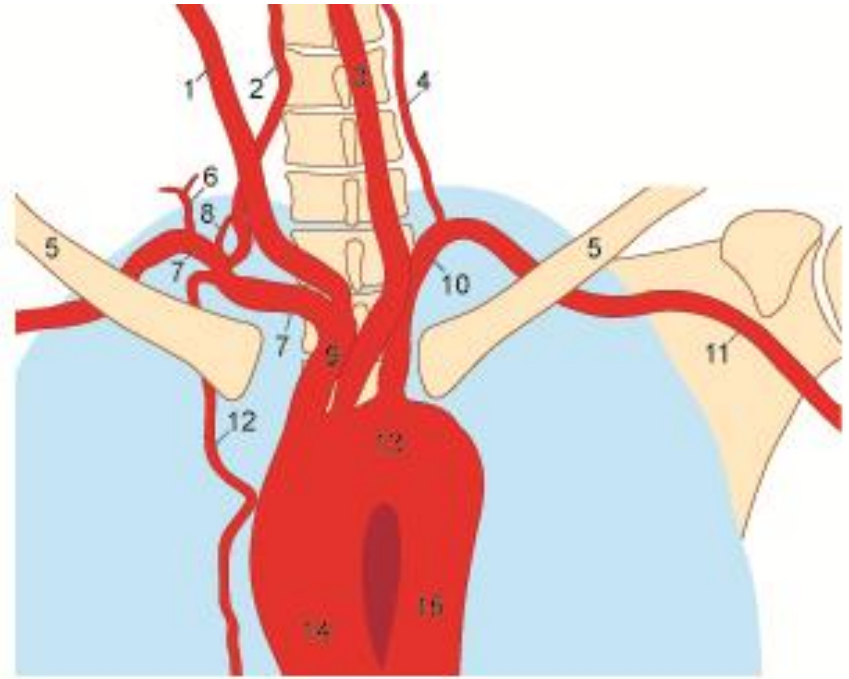
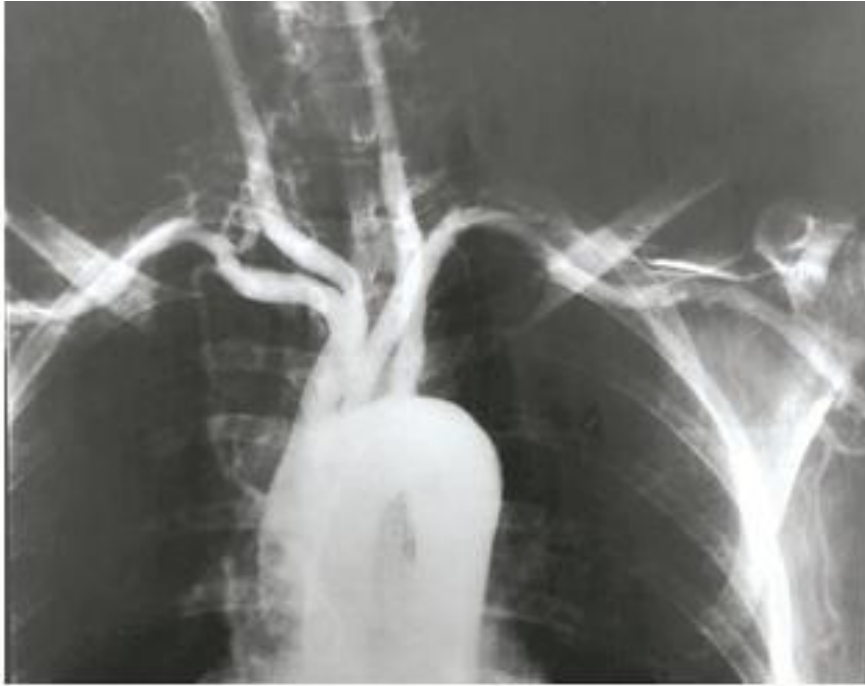


T45

1. Vertebrae cervicales
2. Trachea
3. Aorta gomb
4. Art. pulmonalis dext.
5. Art. pulmonalis sin.
6. Bal pitvar

7. Jobb pitvar
8. Bal kamra fala
9. Bal kamra ürege
10. Diaphragma
11. V. cava inf.
12. Aorta desc.

# ANGIOGRAPHIA

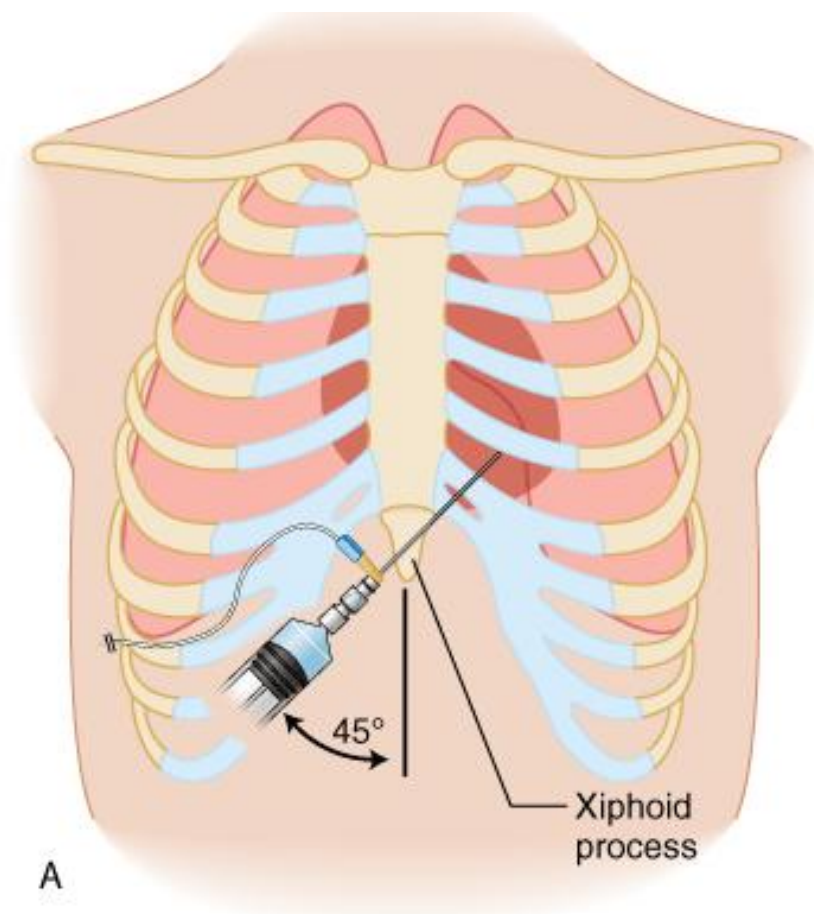


1. Art. carotis commun. dext.
2. Art. vertebralis dext.
3. Art. carotis commun. sin.
4. Art. vertebralis sin.
5. Clavicula
6. Truncus costocervicalis
7. Art. subclavia dext.
8. Truncus thyrocervicalis

9. Truncus brachiocephalicus
10. Art. subclavia sin.
11. Art. axillaris sin.
12. Art. thoracica int. dext.
13. Arcus aortae
14. Aorta ascendens
15. Aorta thoracica desc.

T50

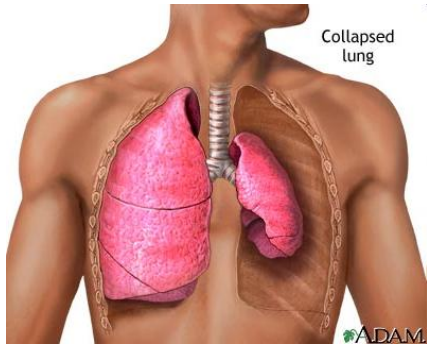
# PERICARDIOCENTESIS



A pericardium üregéből általában 10-20 ml-t lehet lecsapolni (pathológiás esetben akár 250 ml-t is)

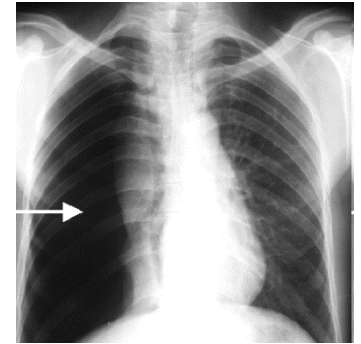
## **TŰ HELYE:**

- *processus xyphoideus és a bal arcus costalis között*
- *30-45° fokos szögben a clavicula közepe felé irányítva.*

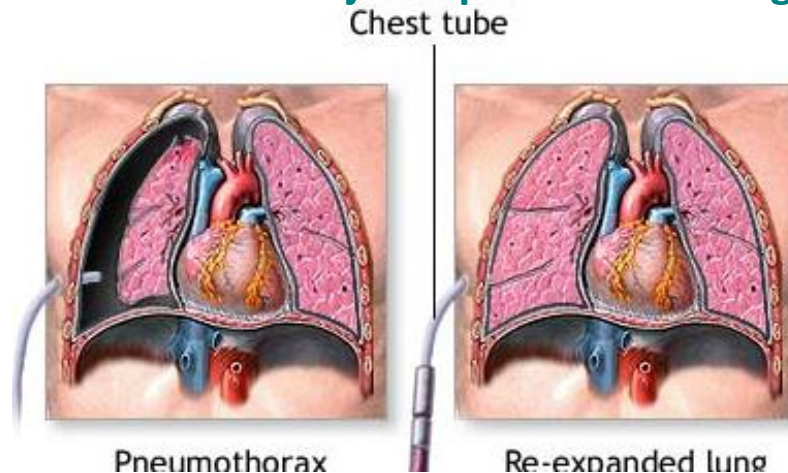


# PLEURA

## PNEUMOTHORAX

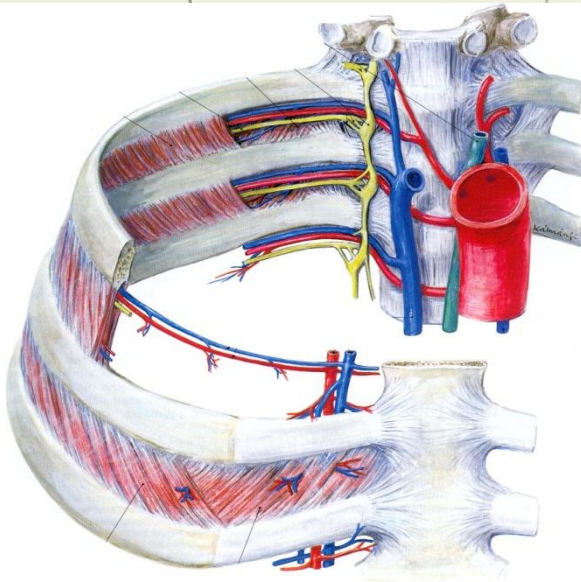
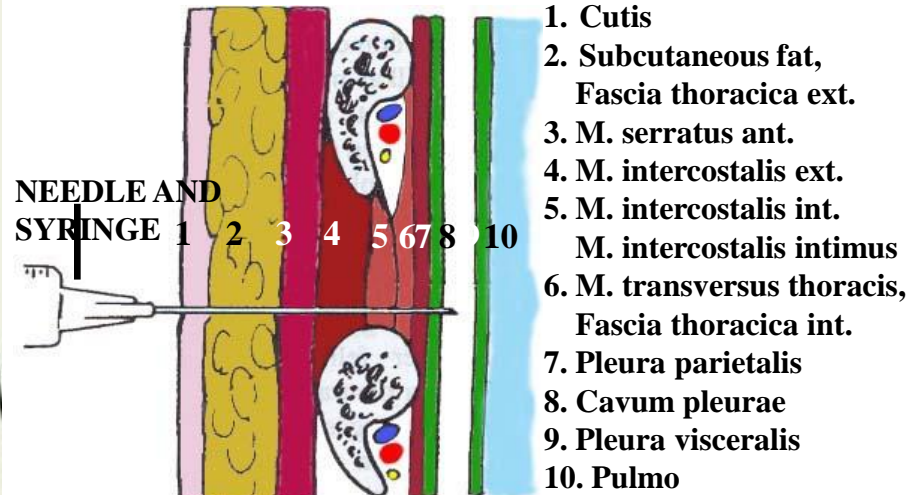
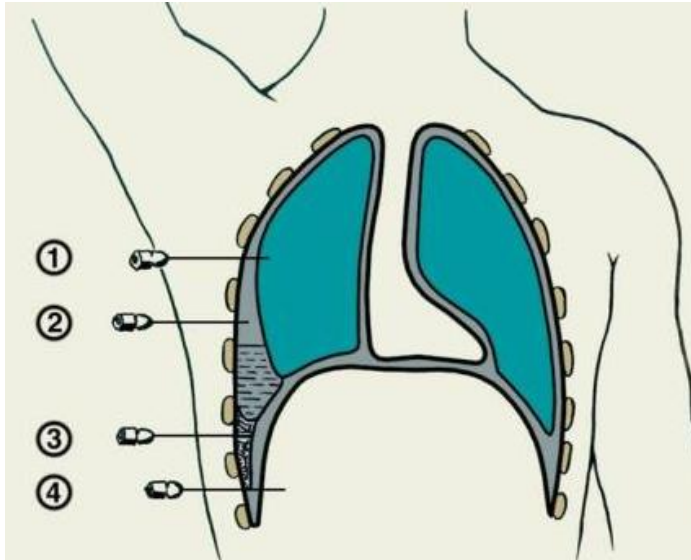


- **Spontan PTX** - nincs határozott oka, okozhatja valamilyen tüdőbetegség, COPD vagy TUBERCULOSIS
- **pneumothorax simplex** - a pleuraűrbe jutó levegőtől a tüdő kollabál, de nem terheli nyomás a környező képleteket.
- **tensiós pneumothorax** – ebben az esetben a mellűri nyomás fokozódása miatt a szív helyzete változhat, ez komoly szív-érrendszeri következményekhez vezet (életveszély)
- **traumás pneumothorax**, - áthatoló sérülés következtében jut a pleuraűrbe levegő

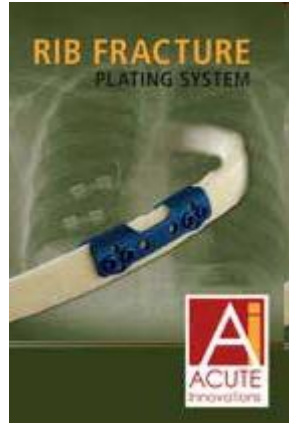
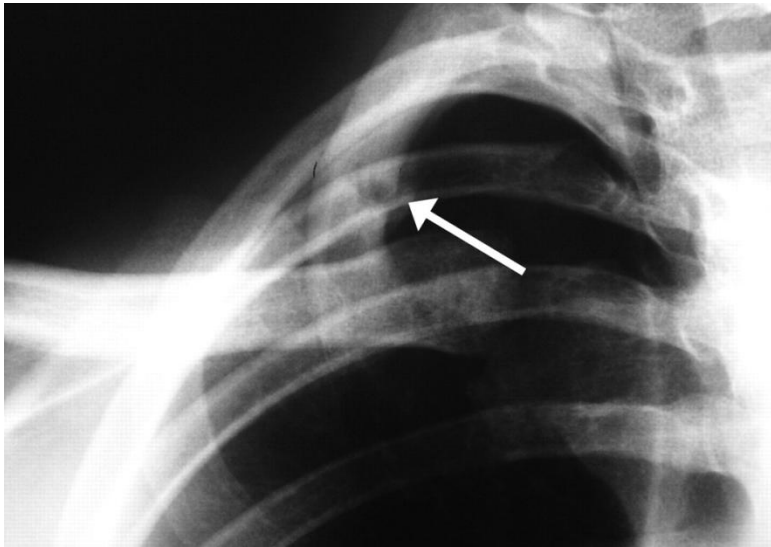


# THORACOCENTESIS

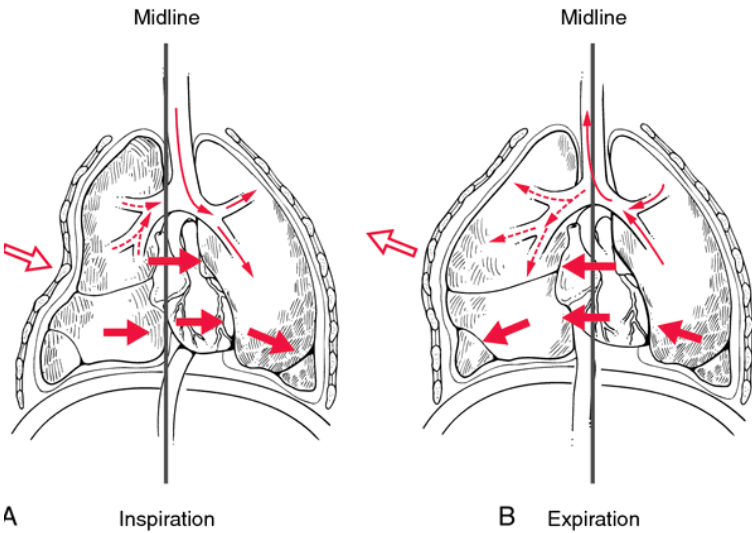
(*Pleura-punctio*)



# KLINIKUM - TRAUMATOLÓGIA

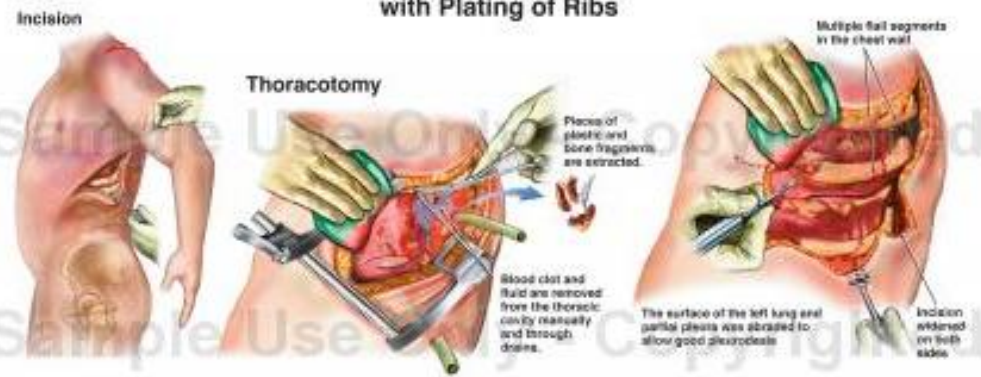


Surgical Fixation of Flail Chest with Plating of Ribs

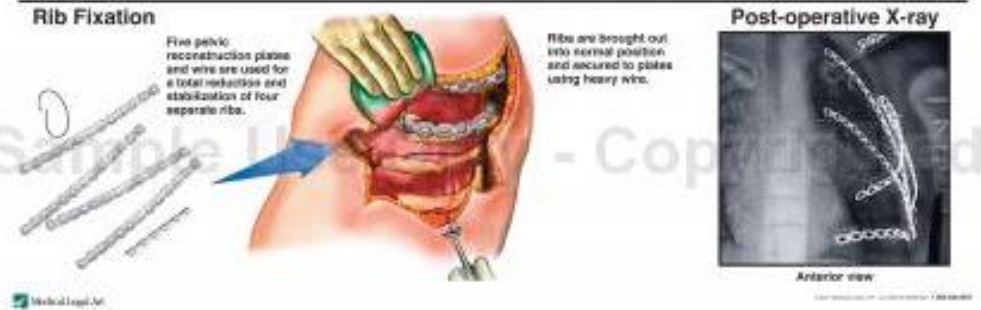


Sample Use Only - Copyrighted

Surgical Fixation of Flail Chest with Plating of Ribs



Sample Use Only - Copyrighted



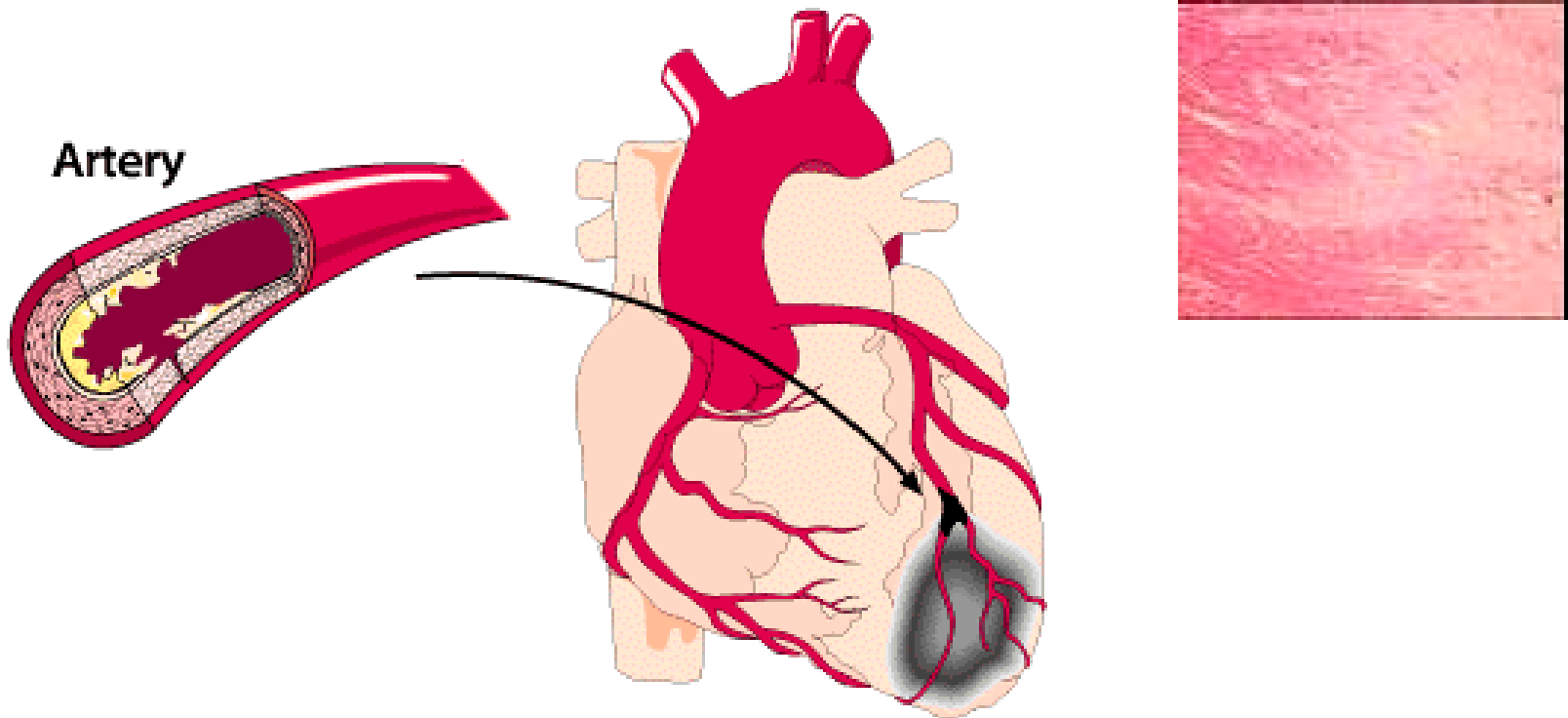
Sample Use Only - Copyrighted

# MYOCARDIALIS INFARCTUS

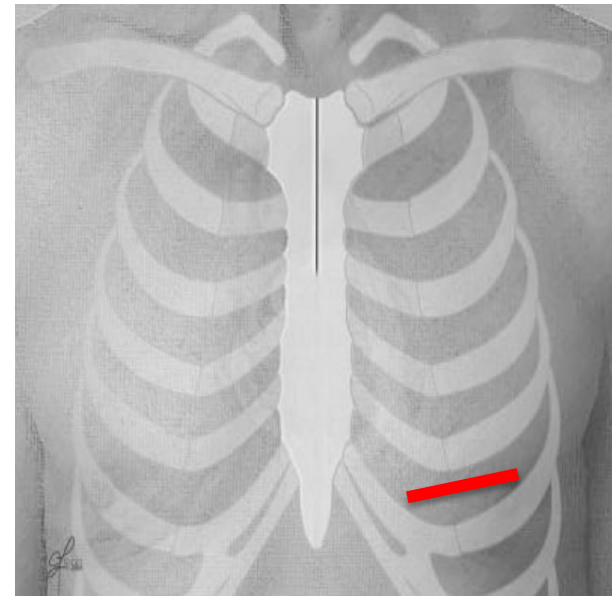
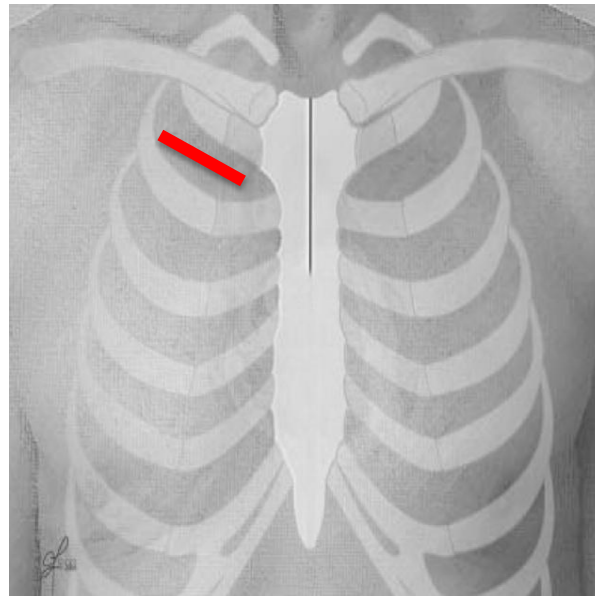
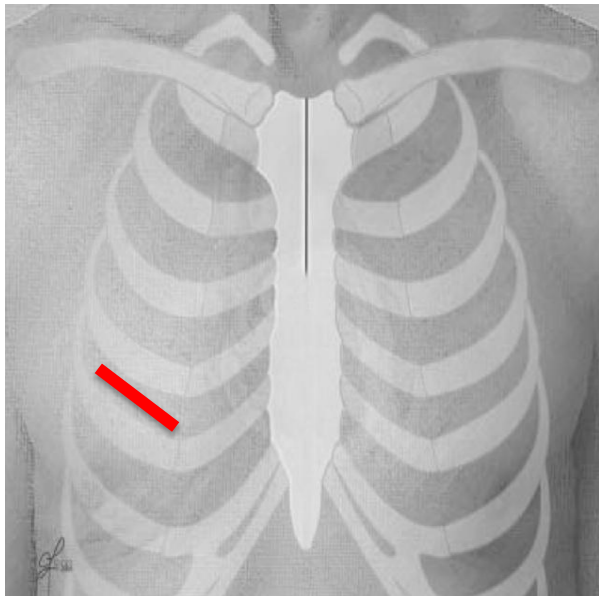
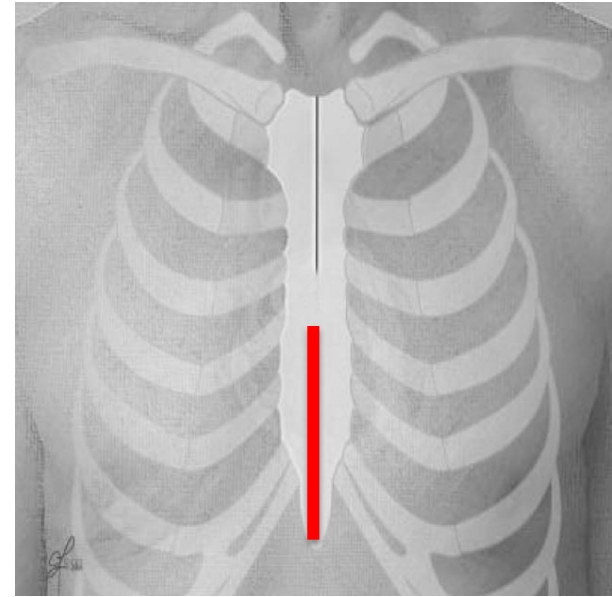
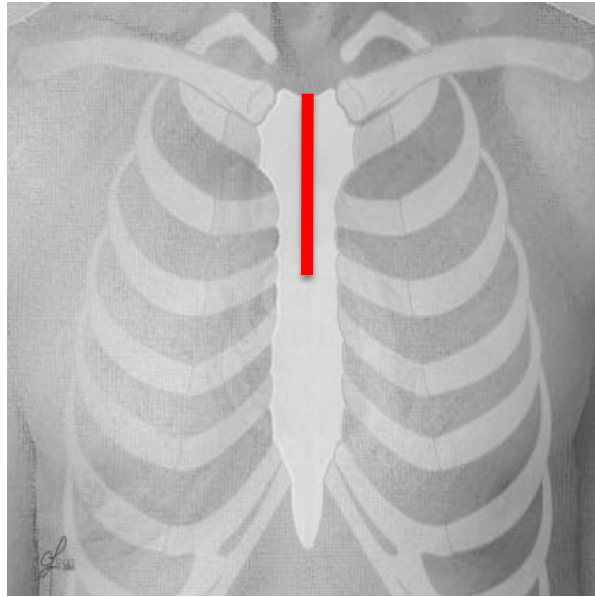
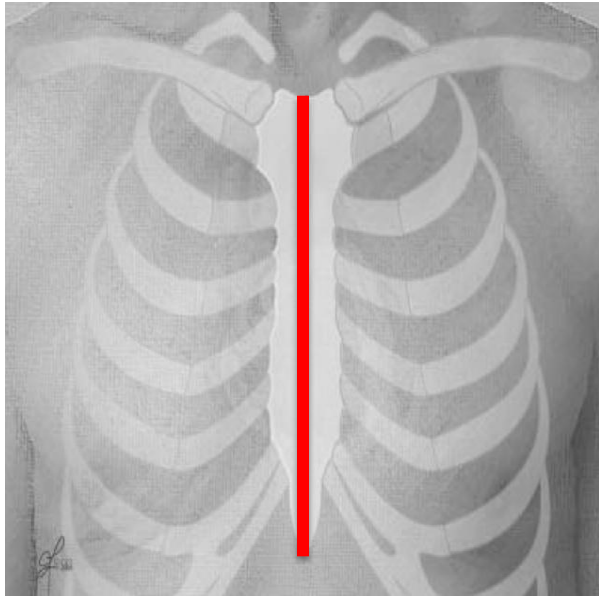
Nagyon gyakori előfordulású

Oka: a. coronaria egyik ágának thrombosisa

Az ischemiás terület sarjszövetesen gyógyul, ktsz helyettesíti a kamrafal egy részét – paradox mozgás – szívfali ruptura veszélye

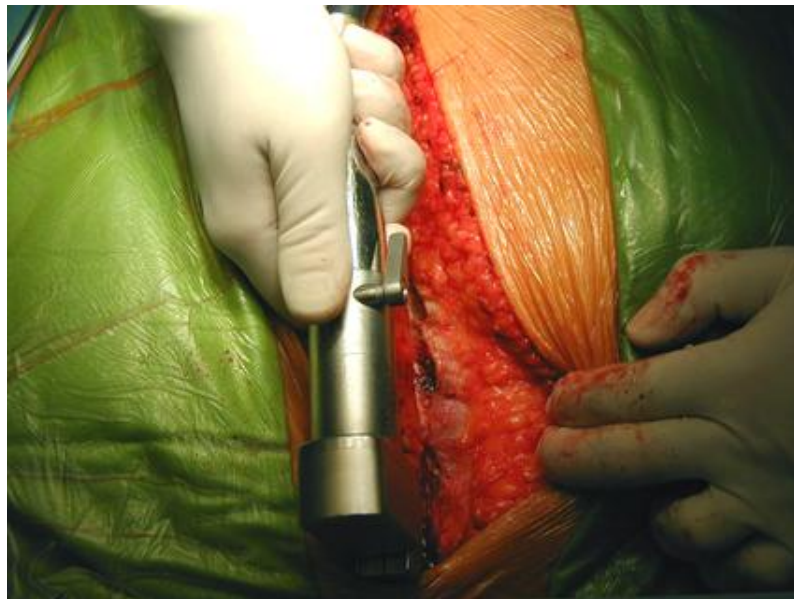
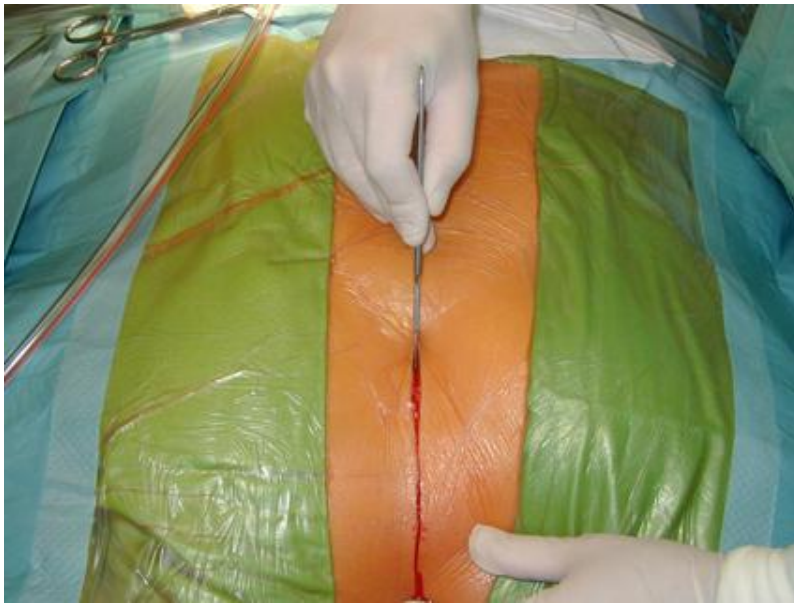


# Sebészeti feltárások

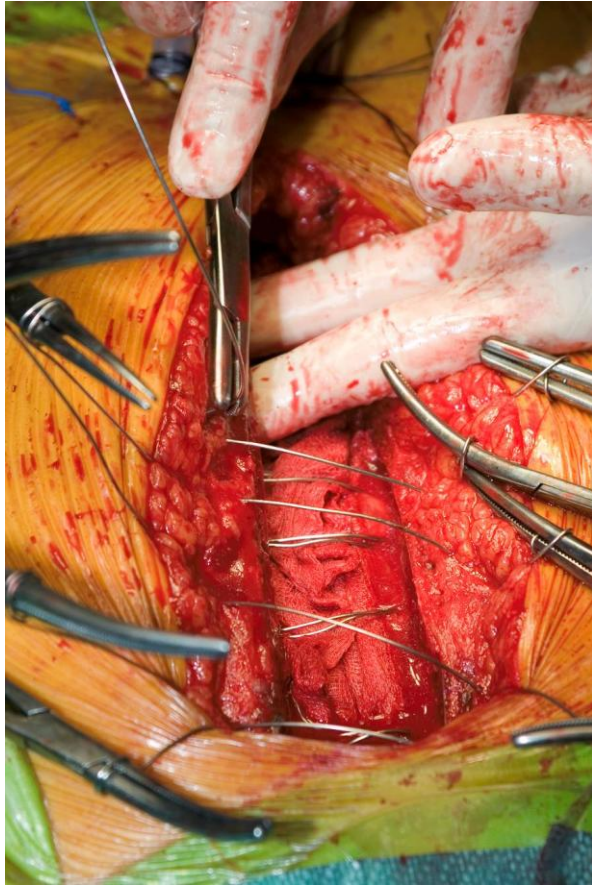




# Median sternotomy

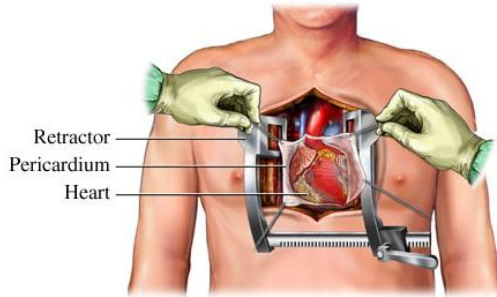


# Median sternotomy



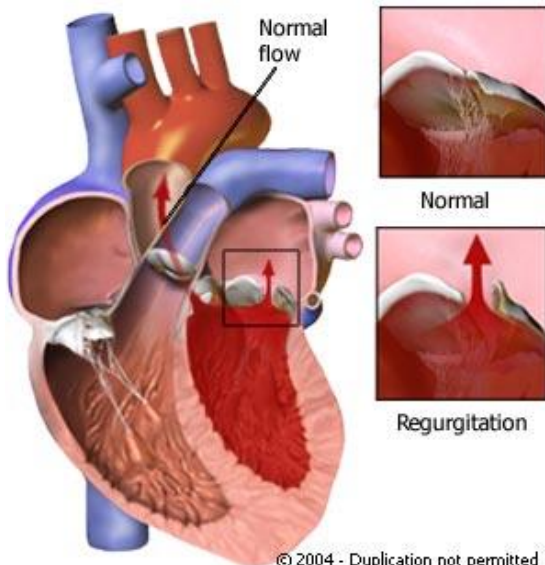
# MEDIASTINUM CARDIACUM

## THORACOTOMIA

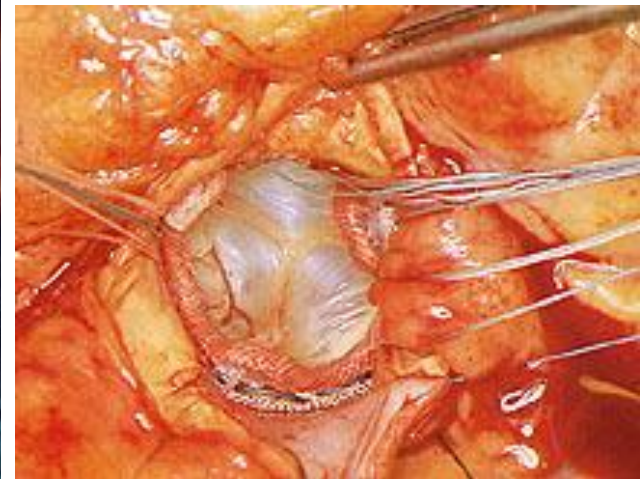
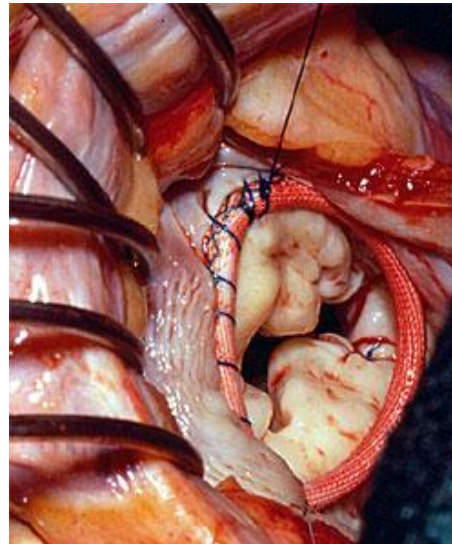
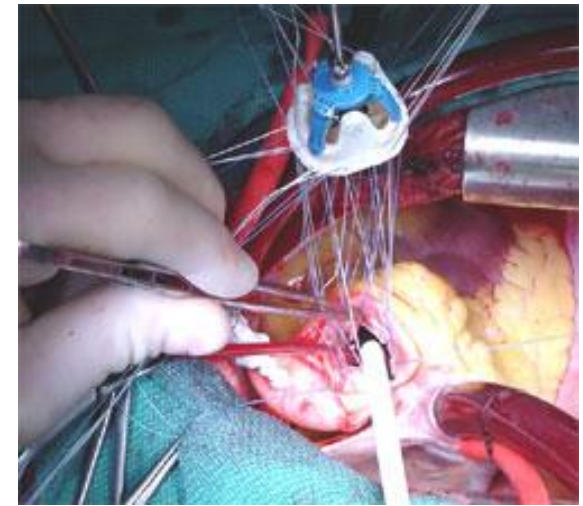
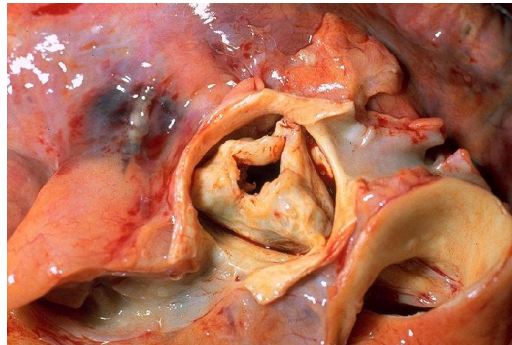


### Valvular Regurgitation

A condition in which blood leaks in the wrong direction because one or more heart valves closes improperly. Mitral valve prolapse (illustrated here) is a common cause of regurgitation.



## SZTENOTIKUS BILLENTYŰ CSERÉJE



***Köszönöm szépen a figyelmet!***



**QR CODE**



## ***FORRÁSOK***

<https://www.youtube.com/watch?v=8b1FQJcRE1k>

Előző intézeti előadások diái:

*(Dr. Csillag András, Dr. Ruttkay Tamás, Dr. Szél Ágoston,  
Dr. Wenger Tibor)*

Standring, Gray's Anatomy, Elsevier, 2005

Csillag, Anatomy of the Living Human, Könenmann 1999.

[www.instantanatomy.net](http://www.instantanatomy.net)